Santa Clara University School of Law

Santa Clara Law Review

Volume 43 | Number 4 Article 2

1-1-2003

Access to Quality Teaching: An Analysis of Inequality in California's Public Schools

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ACCESS TO QUALITY TEACHING: AN ANALYSIS OF INEQUALITY IN CALIFORNIA'S PUBLIC SCHOOLS

Linda Darling-Hammond*

I. INTRODUCTION: OPPORTUNITIES TO LEARN IN CALIFORNIA

As the twenty-first century dawns, schools must become more successful at reaching a wider range of learners if citizens are to acquire the sophisticated skills they need to participate in a knowledge-based society. As a consequence, teachers' expertise and effectiveness are increasingly critical to the success of education in California as elsewhere in the nation. New state standards for student learning reflect greater demands for higher order thinking and performance. The kind of teaching needed to help students to think critically, solve complex problems, and master ambitious subject matter is much more demanding than that needed to impart routine skills. Furthermore, in an era when the student population is more diverse than ever before, teachers are being asked to achieve these goals for *all* children, not just the 10% or 20% who traditionally have been selected into "gifted and talented" or "honors" programs.

In a typical public school classroom in California, at least 25% of students come from families with incomes below the poverty line, more than 25% primarily speak a first language other than English,[1] at least half are members of racial/ethnic

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1. In the 2001-02 school year the total enrollment was 6,147,375. *See* CALIFORNIA DEPARTMENT OF EDUCATION, K-12 ENROLLMENT IN CALIFORNIA PUBLIC SCHOOLS 1980-81 THROUGH 2001-02 (2002), *at* http://www.cde.ca.gov/demographics/reports/statewide/enr8097.htm (last visited Apr. 23, 2003). During this same period, the number of English learners amounted to 1,537,274 students. *See* CALIFORNIA DEPARTMENT OF EDUCATION,

"minority" groups or recent immigrants,[2] and more than 10% have identified learning disabilities.[3] Whereas schools in the past varied the curriculum and learning standards for different learners, today's students are being asked to master the same curriculum standards and to pass the same tests for promotion and graduation, regardless of their different learning needs, starting points, and prior experiences.[4] This trend poses even greater challenges for teaching. Only teachers who are both knowledgeable in their content areas and skillful in using a wide range of teaching methods can respond appropriately to diverse students' needs and enable them to succeed at these challenging learning goals.

Yet in 2000, as new standards for California's students were taking effect, there were more than 40,000 teachers working in California schools without full preparation or credentialing, more than the total in twenty-five other states combined.[5] In addition to the at least 37,000 teachers working on emergency permits or pre-intern credentials without having met the state's standards for content knowledge and teaching skills, more than 3,300 teachers were working on waivers without even having passed the state's basic skills test.[6] In some schools, the proportions of teachers on emergency permits and waivers totaled more than half of the staff.[7] These schools were almost invariably those serving large concentrations of low-income and minority students in urban schools, and they were often the same

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NUMBER OF ENGLISH LEARNER STUDENTS IN CALIFORNIA PUBLIC SCHOOLS, BY LANGUAGE, 2001 THROUGH 2002, *at* http://www.cde.ca.gov/demographics/reports/statewide/leplst2.htm (last visited Apr. 23, 2003) [hereinafter CDE, ENGLISH LEARNERS] (average of 2001 and 2002 non-English as a first language enrolled students).

2. *See* CALIFORNIA DEPARTMENT OF EDUCATION, STATEWIDE ENROLLMENT IN PUBLIC SCHOOLS BY ETHNIC GROUP, 2002-03, *at* http://data1.cde.ca.gov/dataquest/dataquest.asp (last visited Apr. 23, 2003).

3. *See* CALIFORNIA DEPARTMENT OF EDUCATION, SPECIAL EDUCATION REPORT BY AGE AND DISABILITY STATEWIDE REPORT (2002), *at* http://data1.cde.ca.gov/dataquest/dataquest.asp (last visited Apr. 23, 2003).

4. THE NAT'L COMM'N ON TEACHING & AMERICA'S FUTURE, WHAT MATTERS MOST: TEACHING FOR AMERICA'S FUTURE 5 (1996).

5. PATRICK M. SHIELDS ET AL., THE CENTER FOR THE FUTURE OF TEACHING AND LEARNING, THE STATUS OF THE TEACHING PROFESSION: 2000 AN UPDATE TO THE TEACHING AND CALIFORNIA'S FUTURE TASK FORCE 36 (2000).

6. *Id.* at 35-36.

7. *See generally* KEN FUTERNICK, CALIFONIA STATE UNIVERSITY, SACRAMENTO, A DISTRICT-BY-DISTRICT ANALYSIS OF THE DISTRIBUTION OF TEACHERS IN CALIFORNIA AND AN OVERVIEW OF THE TEACHER QUALIFICATION INDEX (TQI) (2001).

schools that lacked supplies, materials, adequate facilities, and the other elements of a sound, basic education.

This article addresses four core questions:

What does the state of California expect of its students and teachers? What standards has the state established for student learning? What qualifications does it require of teachers so that they can support student learning?

How does teacher quality matter for equal educational opportunity?

Do California students have equal access to qualified teachers who can offer the instruction they need to master the state standards?

How might discrepancies in students' access to qualified teachers best be remedied given the California policy context and an understanding of successful policies in other states?

II. BACKGROUND

Following the passage of Proposition 13 in 1979, California's expenditures for public education declined markedly.[8] From the period 1979 through 1994, the state's spending per pupil fell about 25% relative to the average for other states, rebounding somewhat between 1995 and 1998.[9] Although California has a higher cost-of-living than the national average, it spends well below the national average on education both in absolute dollars and as a share of personal income.[10] By 1999-2000, California ranked first in the nation in the number of pupils it served but thirty-eighth in expenditures per student, forty-eighth in K-12 expenditures as a share of personal income, and fiftieth in the ratio of students per teacher, despite the influence of class size reductions during the late 1990s.[11] By the late 1990s, California employed a greater number of under-qualified teachers[12] than any other state in the country, and California ranked in the bottom decile among states class size, staff/pupil ratio, library qual-

8. JON SONSTELIE ET AL., PUB. POL'Y INST. OF CAL., FOR BETTER OR WORSE? SCHOOL FINANCE REFORM IN CALIFORNIA vii (2000).

9. *Id.* at 90.

10. EDSOURCE, HOW CALIFORNIA RANKS: A COMPARISON OF EDUCATION EXPENDITURES 6 (2001).

11. *Id.* at 3, 4, 6.

12. Here and elsewhere, "under-qualified" refers to teachers who lack a preliminary or clear credential in their teaching field, the standard credential recognized by the state of California as reflecting full attainment of its standards for beginning and veteran teachers.

ity, and most other school resources.[13]

In 2001, California's per pupil education spending, adjusted for cost of living, ranked forty-eighth in the nation, reaching only 79% of the national average ($5,603 as compared to a national average of $7,079), earning a grade of "F" for funding adequacy from EDUCATION WEEK.[14] That year, approximately 98% of California students were in districts that spent below the national average.[15] Growing inequalities in funding are also a problem. In 1998, the California Postsecondary Education Commission (CPEC) noted that:

> The gap in expenditures for education between the high-spending and low-spending school districts in our state in the 1991-92 school year was $1,392–a figure that placed our state at approximately the 30th percentile nationally. Today, that gap has risen to $4,480. . . . Perhaps the most disturbing part of this statewide picture is that many of the disparities noted above are consistently and pervasively related to the socioeconomic and racial-ethnic composition of the student bodies in school as well as the geographical location of schools. That is, schools in our low socioeconomic communities as well as our neighborhoods with a predominance of Black and Latino families often have dilapidated facilities, few or inadequate science laboratories, teachers in secondary schools providing instruction in classes for which they have no credential, curriculum that is unimaginative and boring, and teachers who change schools yearly and lack the professional development to complement their teaching with new instructional strategies and materials.[16]

Once among the highest-achieving states in the nation, California now ranks nationally among the bottom three states in average reading and mathematics achievement on the National Assessment of Educational Progress.[17] A recent RAND Corporation report noted:

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13. *See generally* EDSOURCE, *supra* note 10.

14. Lori Meyer et al., *The State of the States*, EDUC. WEEK, Jan. 18, 2002, at 99.

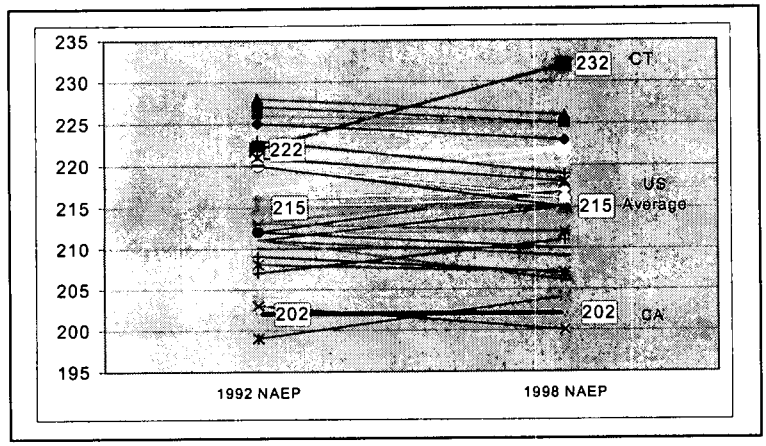
15. *See id.* at 87.

16. CALIFORNIA POSTSECONDARY EDUCATION COMMISSION, TOWARDS A GREATER UNDERSTANDING OF THE STATE'S EDUCATIONAL EQUITY POLICIES, PROGRAMS, AND PRACTICES 29 (1998).

17. *See* Figure 1; NATIONAL CENTER FOR EDUCATION STATISTICS, AVERAGE READING SCALE SCORES FOR THE STATES (2001), *available at* http://www.nces.ed.gov/nationsreportcard/reading/statescales.asp (last visited Apr. 23, 2003) (state public school scaled score data for grade 4 enrollment for the years 1992, 1994, and 1998).

California's public education system is widely thought to be ineffective. When 40 states and other jurisdictions are ranked according to the reading performance of eighth graders on the 1998 National Assessment of Educational Progress (NAEP), California ranked 35th. The reading performance of California's fourth graders was worse when compared to the rest of the nation. California ranked 40th of 43 states and other jurisdictions on that measure. While the characteristics of California's students differ from those in other states in several important respects, these differences cannot account for California's students' poor performance on these tests. For example, when the states are ranked according to the reading performance of students eligible for free or reduced cost school lunch, California ranks at the very bottom of the list both for fourth graders and for eighth graders.[18]

Figure 1
State Average Student Achievement In Reading, 4th Grade
National Assessment of Educational Progress, 1992-1998



An analysis by the Public Policy Institute of California (PPIC) confirmed the view expressed in the RAND report, noting that while California schools lost ground relative to other states across the country in terms of revenues and expenditures during

18. STEPHEN CARROLL, ET AL., RAND EDUCATION, THE DISTRIBUTION OF TEACHERS AMONG CALIFORNIA'S SCHOOL DISTRICTS AND SCHOOLS 1 (2000).

the 1980s and 1990s, California students also lost ground in terms of achievement.[19] Although California students are more likely to be new immigrants and new English language speakers, as well as members of minority groups, these demographic differences do not explain all differences in their performance. After adjusting for the demographic characteristics of the student population, PPIC found that California students still perform considerably worse than those in other states on the NAEP, the tests used in the National Education Longitudinal Study (NELS), and the SAT (also adjusted for participation rates).[20] On national tests, after adjusting for language backgrounds, ethnicity, and parental education, the performance of low-income students was "especially hard hit by the decline in school quality in California."[21]

The RAND Corporation report notes that the quality of teachers available to students is a critical element in the provision of educational opportunity.[22] The number of under-qualified teachers has risen steeply over the decade and has contributed to growing inequality in opportunity to learn.[23] Students in high-minority and low-income schools are several times as likely to have under-qualified teachers as those in more affluent schools. This distribution of teachers closely tracks the distribution of achievement and the strong relationships between socioeconomic status and student performance. Students in the lowest achievement quartile on the Academic Performance Index (API) are almost five times as likely to have under-qualified teachers as students in the highest quartile. The correlation between students' level of achievement and the qualifications of their teachers is extremely strong in California. According to an analysis by Policy Analysis for California Education (PACE) in 2000: "Over the past six years, this relationship (between socioeconomic measures and achievement scores) has strengthened, not diminished."[24]

The unequal allocation of teachers in California has wors-

19. SONSTELIE ET AL., *supra* note 8, at 131-37.

20. *See id.*

21. *See id.* at 136.

22. *See generally* CARROLL ET AL., *supra* note 18.

23. *See id. See also* PATRICK M. SHIELDS, ET AL., THE CENTER FOR THE FUTURE OF TEACHING AND LEARNING, THE STATUS OF THE TEACHING PROFESSION 2001.

24. ELIZABETH BURR ET AL., POLICY ANALYSIS FOR CALIFORNIA EDUCATION (PACE), CRUCIAL ISSUES IN CALIFORNIA EDUCATION 2000: ARE THE REFORM PIECES FITTING TOGETHER 141 (2000).

ened each year since the early 1990s. While the proportion of California schools staffed completely with fully qualified teachers has increased in response to recent policy initiatives aimed at increasing teacher supply, from 24% in 1997-98 to 28% in 2000-01, the share of schools in which more than 20% of teachers are under-qualified has also increased sharply, from 20% in 1997-98 to 24% in 2000-01.[25] The schools with these large proportions of under-prepared teachers—about 1,900 schools enrolling more than 1.7 million children—serve mostly children of color, who frequently are taught by short-term, under-prepared instructors throughout their school careers.[26] As a Stanford Research Institute (SRI) report notes:

> In these schools, as students proceeded through the grades or moved through classes in different subject areas, they were highly likely to have an under-prepared teacher. For example, at the secondary school, each student probably would be in the class of an under-prepared teacher one period per day.[27]

Several California studies have found that these differences in teacher quality are significantly related to student achievement in both mathematics and reading.[28] National studies have also found that differences in teachers' qualifications—including teachers' general ability, knowledge of subject matter, preparation for teaching, and certification status, which reflects aspects of all of these other indicators—show significant effects on student achievement measured at the state, district, school, and individual student levels.[29]

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25. *See* SHIELDS, *supra* note 23, at 37.

26. *See id.*

27. *See id.* at 20.

28. *See* JULIAN R. BETTS, ET AL., PUB. POLICY INST. OF CAL., EQUAL RESOURCES, EQUAL OUTCOMES? THE DISTRIBUTION OF SCHOOL RESOURCES AND STUDENT ACHIEVEMENT IN CALIFORNIA (2000), *at* http://www.ppic.org/publications/PPIC128/PPIC128.pdf/index.html (last visited April 10, 2003); Mark Fetler, *Where Have All the Teachers Gone?*, 5 EDUC. POL'Y ANALYSIS ARCHIVES 2, *at* http://epaa.asu.edu/epaa/v5n2.html (Jan. 8 1997); Laura Goe, Legislating Equality: The Distribution of Emergency Permit Teachers in California, 10 EDUC. POL'Y ANALYSIS ARCHIVES 42, *at* http://epaa.asu.edu/epaa/v10n42/ (Oct. 14, 2002); LOS ANGELES COUNTY OFFICE OF EDUCATION, TEACHER QUALITY AND EARLY READING ACHIEVEMENT IN LOS ANGELES COUNTY PUBLIC SCHOOLS, 6 TRENDS: POLICY ISSUES FACING LOS ANGELES COUNTY PUBLIC SCHOOLS (1999).

29. *See* Linda Darling-Hammond, *Teacher Quality and Student Achievement: A Review of State Policy Evidence*, 8 EDUC. POL'Y ANALYSIS ARCHIVES 1 (2000), *available at* http://epaa.asu.edu/epaa/v8n1 (last visted April 10, 2003); Ronald F. Ferguson,

III. STATE STANDARDS AND STATE GUARANTEES[30]

In 1995, California passed the California Assessment of Academic Achievement Act.[31] The Act established "a system of individual assessment of pupils" for the purpose of both identifying student strengths and needs and determining the effectiveness of schools and districts "as measured by the extent to which pupils demonstrate knowledge of the fundamental academic skills, as well as the ability to apply those skills."[32] The legislature views these skills as "fundamental," and it required the establishment of a set of statewide content and performance standards for student learning to guide the construction of tests and curriculum for local school districts (the Standards).[33] The Act requires that these Standards

> be measurable and objective;
>
> reflect the knowledge and skills necessary for California's workforce to be competitive in the global, information-based economy of the 21st century;
>
> be comparable in rigor to the academic content and performance standards used in the school systems of America's global competitors; and
>
> include input from parents, educators, and the public in all geographic regions of the state, including at least six public hearings.[34]

These Standards are much more than window-dressing in the policy landscape. While the Standards are characterized as

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Paying for Public Education: New Evidence on How and Why Money Matters, 28 HARV. J. ON LEGIS. 465 (1991); *see generally* Dan D. Goldhaber & Dominic J. Brewer, *Does Teacher Certification Matter? High School Teacher Certification Status and Student Achievement*, 22 EDUC. EVALUATION & POL'Y ANALYSIS 129 (2000); *see* David H. Monk, *Subject Matter Preparation of Secondary Mathematics and Science Teachers and Student Achievement*, 13 ECON. OF EDUC. REV. 125, 142-43 (1994). *See also* Robert P. Strauss & Elizabeth A. Sawyer, *Some New Evidence on Teacher and Student Competencies*, 5 ECON. EDUC. REV. 41, 41-48 (1986).

30. This section draws heavily on William S. Koski, *What Educational Resources Do Students Need to Meet California's Educational Content Standards? A Textual Analysis of California's Educational Content Standards and Their Implications for Basic Educational Conditions and Resources* (2002), *at* http://www.mofo.com/decentschools/expert_reports/koski_report.pdf (last visited Apr. 10, 2003).

31. CAL. EDUC. CODE §§ 60600 et seq. (West 2003).

32. *Id.* § 60602(a).

33. *Id.* § 60605.

34. *Id.* § 60605 (indicating that Section (b) of Chapter 330 of the Statutes of 1998 established the requirements for the content standards).

"model" standards rather than as mandates, they form the basis for many other state requirements and for holding students and schools accountable. All state-adopted curriculum frameworks, instructional materials, examinations, teacher credentialing standards, and school accountability initiatives are required to be aligned with these Standards.[35] The legislation has mandated that school districts in California end the practice of social promotion; districts are encouraged to tie grade advancement to achievement on the state's standards-based exams.[36] The state has developed a system of rewards for schools that meet targets for average gains on the tests and also has established an intervention program followed by punitive sanctions for those that fail to show annual improvements.[37]

Finally, by 2004, all California children will be required to pass a high school exit examination in language arts and mathematics in order to earn a high school diploma.[38] The tests are constructed to evaluate compliance with the state's academically rigorous content standards. Thus, the Standards and tests associated with them matter intensely for children in California schools.

Content standards and curriculum frameworks based on the Standards have been adopted by the State Board of Education in four areas: (1) English-Language Arts, (2) Mathematics, (3) History-Social Science, and (4) Science. The curriculum frameworks describe the instructional content and activities that students are expected to engage in to master the Standards. The "Frameworks and Materials Commission" that undertook the development of the frameworks also was charged with evaluating instructional materials submitted for adoption.[39] (Unlike most states that leave materials selection in the hands of local districts, California requires districts to select from among state-approved texts and other materials.) The criteria for adoption include a determination of how well texts and other materials are aligned with the frameworks and, by extension, the Stan-

35. *Id.* §§ 60604(a), 60605(a)(2)(A), 60618, 60850.

36. The California Education Code provides that promotion and retention for students in the second to ninth grades shall be determined on the basis of either (a) the results of the state's STAR tests and minimum proficiency levels recommended by the State Board or (b) the pupil's grades and other indicators of academic achievement designated by the district. *See* CAL. EDUC. CODE § 48070.5 (West 2003).

37. *Id.* § 52050.

38. *Id.* § 60850.

39. *Id.* § 33530.

dards.[40]

It is not only fair but essential, then, to ask what the Standards require regarding students' opportunities to learn and to evaluate whether all students have access to these opportunities. There are a number of things that are necessary for students to be taught in conformance with the requirements of the Standards, including school facilities and equipment that enable students to work effectively on academic tasks and curricular programs, technologies, and instructional materials that are aligned with the Standards and frameworks.[41] These tangible resources, however, can only be as effective as the teachers who employ them. The next section focuses on the kinds of teaching and capacities of teachers anticipated by the Standards and frameworks.[42]

A. *Teaching Requirements of the California Standards and Curriculum Frameworks*

As detailed in Koski,[43] the process of evaluating needed resources for teaching students the skills to meet each of the Standards included judgments of three separate reviewers, instructed to assess the requirements conservatively, in terms of minimum necessary knowledge, skills, or resources, rather than the most ideally desirable.[44] This evaluation documents how the Standards articulate expectations for teaching content, materials, and strategies. As Koski describes, the Standards indicate that effective teachers must understand the content they are expected to teach and be able to use a wide range of teaching techniques to convey this content.[45]

For example, the English language arts standards convey the expectation that early grade teachers must have a deep understanding of reading development and a range of sophisticated skills to enable reading, including knowledge of the struc-

40. *Id.*

41. These issues are discussed in Jeannie Oakes & Marisa Saunders, *Access to Textbooks, Instructional Materials, Equiptment, and Technology: Inadequacy and Equality in California's Public Schools*, *at* http://www.mofo.com/decenschools/expert_reports/oakes_report_2.pdf (last visited Apr. 10, 2003).

42. For a fuller treatment of the requirements of each curriculum framework, *see id.*; *see also* Koski *supra* note 30.

43. *See* Koski, *supra* note 30.

44. *See id.* at 13-14.

45. *See id.* at 11-12.

ture of the English language and how to apply best practices of reading instruction. More specifically, teachers must be able to provide instruction and support in phonemic awareness, phonics, word decoding and word-attack skills, spelling, vocabulary, reading comprehension, writing skills and strategies, written and oral English language conventions, and listening and speaking skills.[46] At higher grade levels, English language arts teachers also are expected to know how to continue to develop reading skills as well as to be familiar with historically and culturally significant texts and be able to convey the themes and meaning of these texts to his or her class.[47]

In each subject area, the Standards require that teachers not only understand the content their students are expected to learn, but also have a repertoire of teaching strategies to engender and support student understanding.[48] Teachers of History-Social Science must not only know the details of particular historical events, but also be equipped with the requisite skills to relate these events to his or her students effectively. In the area of science, teachers not only must be able to conduct experiments, but must also be prepared to enable students to perform and understand the experiments themselves. And, in the area of mathematics, a teacher of algebra must not only know the order of operations; he or she must also be able to teach students in a way that enables them to apply the order of operations on their own.

There are clear and direct links between the Standards established for student learning in California and the standards established for teaching credentials. These are described in detail in Koski and summarized, with further elaboration, below.[49]

1. *The States' Role in Ensuring that Teachers Can Teach the Standards*

The primary tool California uses to ensure that teachers are prepared to teach in the manner required by the Standards is its teacher credentialing system. The California Commission on Teacher Credentialing (CCTC) is charged with ensuring that candidates who are recommended for a credential have demonstrated satisfactory ability to assist students to meet or exceed

46. *See id.* at 4.
47. *See id.*
48. *See id.* at 5.
49. Koski, *supra* note 30.

state content and performance standards for pupils.[50] The CCTC has integrated preparation for teaching the Standards into both the subject matter and professional preparation requirements for receiving a credential (primarily in the form of courses, tests, and supervised practice teaching) and the accreditation requirements that pertain to schools of education.

California issues two types of clear teaching credentials: Single subject (for teachers who teach a specific subject in a departmentalized class, usually in secondary school) and multiple subject (for teachers who teach all subjects in a self-contained classroom, most often used in elementary school).[51] In order to earn either type of teaching credential, candidates are required to demonstrate their subject matter competence. This can be accomplished either by completing an approved subject matter preparation program in a California college or university or by passing one or more subject matter competency tests adopted by the California Commission on Teacher Credentialing.

Authorizing legislation provides that both subject matter competence exams and subject matter preparation programs must be aligned with the state content standards and curriculum frameworks.[52] "The commission [on teacher credentialing] shall ensure that subject matter standards and examinations are aligned with the state content and performance standards adopted for pupils."[53] This mandate is reiterated in the Single Subject Assessments for Teaching: 2000-2001 Registration Bulletin, which states, "The content of the SSAT reflects the knowledge required of teachers in California classrooms. The tests are based on California content frameworks and other curriculum and instructional materials."[54]

In addition to demonstrating subject matter competence through specified coursework or test passage, candidates for a single subject or multiple subject credential must also complete an accredited program of professional preparation.[55] Minimum requirements for a professional clear teaching credential, set by

50. CAL. EDUC. CODE § 44259(b)(3) (West 2003).

51. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, STANDARDS OF QUALITY AND EFFECTIVENESS FOR MULTIPLE AND SINGLE SUBJECT CREDENTIALS v-vi (1998) [hereinafter CCTC. MULTIPLE & SINGLE SUBJECT CREDENTIALS].

52. CAL. EDUC. CODE § 44259(b)(5) (West 2003).

53. *Id.*

54. NATIONAL EVALUATION SYSTEMS, INC., CALIFORNIA SINGLE SUBJECT ASSESSMENTS FOR TEACHING: 2000-2001 REGISTRATION BULLETIN.

55. CAL. EDUC. CODE § 44259 (West 2003).

the California Commission on Teacher Credentialing, also include:

> A baccalaureate degree or higher degree from a regionally accredited institution of postsecondary education;
>
> Passage of the state basic skills examination (CBEST);
>
> A professional teacher preparation program including student teaching;
>
> A course in reading instruction and study of alternative methods for developing English language skills;
>
> Passage of the Reading Instruction Competence Assessment (RICA) for Multiple Subjects credential candidates;
>
> Demonstration of knowledge of the principles and provisions of the Constitution of the United States through course or test passage;
>
> Coursework in the laws, methods, and requirements for providing education opportunities to individuals with exceptional needs in the regular classroom;
>
> A course in health education, including nutrition, the physiological and sociological effects of abuse of alcohol and narcotics and the use of tobacco, and training in cardiopulmonary resuscitation; and
>
> Demonstration of competency in the use of computers in the classroom.[56]

In order to gain a preliminary teaching credential, candidates must complete the first six items listed above plus the demonstration of subject matter competence.[57] Until recently, candidates also had to complete a fifth year of study after college to receive a clear credential.[58] With recent legislation,[59] the clear credential will no longer always require the fifth year; candidates also have the option of completing all of the nine items above plus an individualized induction plan and two years of successful teaching experience.[60]

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56. *See id.* §44259(c)(3)(A); *see also* CCTC *supra* note 51.

57. *See generally* CCTC. MULTIPLE & SINGLE SUBJECT CREDENTIALS, *supra* note 53.

58. *Id.*

59. *See generally* California Senate Bill 2042 (SB 2042) information at http://www.ctc.ca.gov/SB2042/SB2042_info.html (last visited Apr. 10, 2003) [hereinafter SB 2042].

60. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, TEACHERS MEETING

The courses and tests required of candidates are carefully mapped onto the CCTC's standards describing what teachers should know and be able to do, which are in turn directly related to the content standards expected of students. For example, the Reading Instruction Competence Assessment (RICA) was constructed "to ensure that these prospective teachers have learned the knowledge and skills they need to provide effective reading instruction in a balanced, comprehensive program for K-8 students."[61] It includes a written examination and a video performance assessment covering forty-three teacher competencies within thirteen content areas, including assessment of reading development, planning and managing reading instruction, phonemic awareness, phonics and other word identification strategies, concepts about print, spelling instruction, reading comprehension, literary response and analysis, content area literacy, student independent reading, relationships among reading, writing, and oral language, vocabulary development, and structure of the English language.[62] The Standards make clear that these are the skills that students are expected to acquire.

At the secondary level, the knowledge required of secondary English teachers, for example, is reflected in the course requirements for approved English Education programs and the English language arts subject matter tests.[63] These requirements closely correspond to the content standards for high school students.[64] Teachers' preparation must include:

> a basic knowledge of literature, language, linguistics, rhetoric, composition, and various issues related to the study of English (e.g., literacy, access and equity, dialects, the canon, and second language acquisition). The student should also

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STANDARDS FOR PROFESSIONAL CERTIFICATION IN CALIFORNIA: SECOND ANNUAL REPORT 376 (2001).

61. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, RICA: WHY, WHAT, WHEN, AND WHO? CALIFORNIA REFORMS IN READING INSTRUCTION (K-8) (undated).

62. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, READING INSTRUCTION COMPETENCE ASSESSMENT (RICA): RESULTS OF THE 1998 ADMINISTRATIONS 4-6 (1999), *available at* http://www.ctc.ca.gov/aboutctc/agendas/march_1999/perf/perf3.html (last visited Apr. 10, 2003).

63. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, ENGLISH TEACHER PREPARATION IN CALIFORNIA, STANDARDS OF QUALITY AND EFFECTIVENESS FOR SUBJECT MATTER PROGRAMS (1992).

64. CALIFORNIA DEPARTMENT OF EDUCATION, ENGLISH-LANGUAGE ARTS CONTENT STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS, KINDERGARTEN THROUGH GRADE TWELVE (1998).

> be skillful at planning and writing well-developed, well-crafted essays on literature, language, and issues related to the study of English.[65]

Similarly, in mathematics, science, and history-social science, the knowledge requirements of the CBEST, the Multiple Subjects Assessment for Teachers (MSAT) (for elementary teachers), the Single Subject Assessment for Teaching (SSAT) and Praxis examinations (for secondary teachers) correspond to the content students are expected to learn.[66]

Equally important are the state's expectations—reflected in its requirements for the teacher credential and for the accreditation of teacher education programs—for teaching content to diverse learners: knowledge of second language acquisition and development, knowledge of child development, and knowledge of the needs of exceptional learners and strategies for teaching to these special needs. For example, the state requires that teacher education programs must be designed to ensure, among other things, that each candidate:

> demonstrates an understanding of the scope and sequence of the curriculum in each subject area that he or she teaches;
>
> engages in intensive study of pedagogical approaches and materials for teaching the subject(s) and language(s) to be authorized by his or her credential;
>
> reviews research on effective teaching practices, and examines the use of those practices among students of differing gender, ethnicity, and handicapping conditions;
>
> develops the cross-cultural knowledge and multicultural competencies necessary to interact effectively with children and adults from linguistically and culturally diverse groups;
>
> studies human development throughout the life span with special emphasis on cognition, language, physical, social, and emotional development, both typical and atypical;
>
> examines theories of human learning and cognition, including first and second language acquisition, and studies ways to identify students' preferred learning modes or styles; and
>
> studies classroom practices and instructional materials that promote educational equity and ones that undermine equity among students of different ethnicity, gender, socio-

65. *See id.*

66. *See generally* Koski, *supra* note 30, at 4-6.

economic status, and handicapping conditions.[67]

Over 1.5 million students enrolled in California's K-12 public schools are classified as English Language Learners (ELLs).[68] This represents more than a quarter of California's K-12 student body population.[69] This heterogeneous group of students comes to California's classrooms from various socioeconomic and political circumstances, each with varying degrees of proficiencies in both their native language and English, and with differing amounts of academic content knowledge and prior schooling, all of which affect learning needs and readiness. Instructors of these students need additional teaching skills and theoretical knowledge beyond that which is taught to mainstream teachers in order to instruct this population effectively. Such considerations have resulted in the creation of the Cross-cultural, Academic, and Language Development (CLAD) and Bilingual Cross-cultural, Academic, and Language Development (BCLAD) certificates.[70] Both certificates have served as add-ons to a teacher's existing credential. In the newest revision of the state's teaching standards under SB 2042, the requirements will soon be included under the standard credential.[71] To receive CLAD certification, teachers must illustrate competencies in the following three broad areas of content either through college level course work or comprehensive exams.[72]

1) *Second language acquisition.* Includes basic theories of second language acquisition linked to instructional strategies and pedagogical techniques related to the teaching/learning of language minority students. Also includes psychological, sociocultural, political, and pedagogical factors affecting students' language development.

2) *Bilingual, English Language Development, and content instruction theories and methodology.* Includes methods of instruc-

67. CCTC, MULTIPLE AND SINGLE SUBJECT CREDENTIALS, *supra* note 51, at 31-33, 37-38.

68. *See* CDE, ENGLISH LEARNERS, *supra* note 1.

69. *Id.*

70. CAL. CODE REGS. tit. 5, §§ 80015, 80015.1, 80015.4 (West 1998).

71. *See* SB 2042, *supra* note 59.

72. CAL. EDUC. CODE § 44253; *see also* CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, CROSSCULTURAL, LANGUAGE, AND ACADEMIC DEVELOPMENT (CLAD), AND BILINGUAL, CROSSCULTURAL, LANGUAGE, AND ACADEMIC DEVELOPMENT (BCLAD) (2002), *at* http://www.ctc.ca.gov/credentialinfo/topics/clad_bclad.html (last visited Apr. 23, 2003) [hereinafter CCTC, CLAD].

tion both in and through English, including approaches with a focus on English language development (ELD) and with a focus on content area instruction (including Specially Designed Academic Instruction delivered in English, or SDAIE). Methods for explicitly teaching listening, speaking, reading, and writing skills in English to ELL students are modeled and taught.

3) *Culture and cultural diversity.* Includes cultural diversity in California and the United States, the roles of family and community resources, cross-cultural interaction, and culturally responsive pedagogy. Also includes the study of historical and contemporary demography, migration, and immigration.[73]

For BCLAD certification, teachers are required to demonstrate knowledge of the above, either through coursework or examinations, and exhibit proficiency in a target language, knowledge of the target culture, and methodology for instruction in the target language.[74]

Since all students are expected to meet the state's Standards, California has deemed it critical that teachers have the knowledge they need to teach all children. The state endeavors to ensure that teachers have this knowledge through its regulation of teacher education accreditation and credentialing.

2. *Authorization to Teach for Those who Have not Met Credential Requirements*

As noted earlier, however, a sizeable minority of California's teachers—well over 40,000 in 2000-01—lack a full credential for all or part of their teaching assignment,[75] and many have not completed, or even begun, a teacher education program. Candidates who receive other credentials, permits, or waivers satisfy some but not all of the requirements outlined above.

To hold an intern credential, candidates must have satisfied most of the subject matter requirements detailed above, passed

73. CCTC, CLAD, *supra* note 72.

74. *Id.*

75. Here and elsewhere, a "full" credential refers to a preliminary or clear credential held by a beginning or veteran teacher who has met all of the basic skills, content, and teaching standards for a regular credential set by the CCTC. In 2000-01, the CCTC reported that it issued 32,573 emergency permits, 2,265 waivers, 8,092 pre-intern credentials, and 3,953 intern credentials, for a total of 46,683 substandard credentials. *See* CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, TEACHER SUPPLY IN CALIFORNIA, A REPORT TO THE LEGISLATURE: FOURTH ANNUAL REPORT (2002).

the CBEST, and hold a bachelors degree.[76] They must also be enrolled in an approved internship program that provides coursework and a supervised teaching experience.[77] Generally, interns serve as the teacher of record for all or part of the school day. Some programs provide some student teaching experience before candidates take on this role, others do not. Interns generally complete the professional preparation requirements over a two-year period while they are teaching.[78]

Teachers on emergency permits or pre-intern credentials lack either the professional preparation and/or the content preparation expected of a fully prepared teacher or both. To hold an emergency permit or a pre-intern credential, candidates must have passed the CBEST, hold a bachelor's degree, and meet a less rigorous subject matter standard.[79] Emergency permit holders must submit a statement "demonstrating intent" to complete requirements for a credential.[80] Emergency permits can be renewed for five consecutive years, during which the

76. University or district internship credentials can be issued to candidates on a showing of: (1) A baccalaureate degree or higher degree from a regionally accredited institution of postsecondary education; (2) Passage of the state basic skills examination (CBEST); and (3) Demonstration of a knowledge of the principles and provisions of the Constitution of the United States through course or test passage (university intern only). Interns may be issued a credential if they have completed 80% of an approved subject matter program, rather than the entire program. Interns are expected to satisfy the remaining requirements—including all of their professional preparation requirements, with the exception of student teaching—while they are serving as interns. *See* CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, A REPORT ON TEACHING INTERNSHIP GRANT PROGRAMS 1994-1999: LESSONS LEARNED & CHALLENGES TO FACE (1999), *at* http://www.ctc.ca.gov/aboutctc/agendas/november_1999/prep/prep4.html (last visited Apr. 10, 2003) (internal citation omitted).

77. *Id.*

78. *Id.*

79. The minimum requirements for a multiple subject emergency permit candidate are ten semester units of college coursework in each of *any four* of the following subject areas: language studies, literature, history, social science, mathematics, science, humanities, art, physical education, and human development. In contrast to the approved subject matter program requirements, this requirement requires fewer courses and less comprehensiveness. For example, a candidate could lack courses in certain areas, such as mathematics or science, entirely. The minimum requirements for a single subject candidate are eighteen semester units in the subject area to be listed on the permit. These expectations are also less rigorous than the requirements for completing an approved subject matter program, both in quantity and expectations for breadth of content coverage. The emergency permit requirement can also be satisfied by passing a subject matter examination. *See* CAL EDUC. CODE §44301 (West 2003); CAL. CODE REGS. tit. 5 §§ 80024.8, 80024.7.

80. *See generally* CAL EDUC. CODE §44301; CAL. CODE REGS. tit. 5 §§ 80024.8, 80024.7.

candidate is expected to complete a minimum of six semester units of coursework annually to renew the permit.[81] Some teachers who are fully prepared and credentialed in another state teach on emergency permits while they are completing specific California requirements; some who are credentialed in another field hold emergency permits while they teach out of field.[82]

Pre-interns are emergency permit teachers who have not yet satisfied the subject matter competence requirement for entry into an internship program and who have agreed to work toward subject matter competence while they are teaching as teachers of record.[83] They also generally have not begun studying toward the professional preparation requirements. They must "demonstrate intent" to take the state's subject matter examinations for teachers and take content courses in a university while they hold the certificate.[84] Pre-interns are not expected to have met the longer list of professional preparation requirements outlined above.[85] If they enter an intern program, they then will be expected to pursue those requirements. Finally, the Commission on Teacher Credentialing also grants short-term and variable term waivers that allow non-credentialed teacher candidates to waive any of the statutory and regulatory requirements for credentials.[86] Waivers are generally issued to candidates who have not passed the CBEST or met the subject matter standards.[87]

None of these adjunct categories of credentials, permits, or waivers requires that the candidates fully meet the state's subject matter competence standards, which are tied to the student learning standards, before they assume teaching responsibilities. Furthermore, none of them requires that teachers have studied or demonstrated proficiency in standards-based methods of teaching subject matter, reading, English language learners, or special education students before they take responsibility for students, as full (preliminary or clear) credential holders are re-

81. *See* CAL. CODE REGS. tit. 5 § 80026.

82. *See generally* CAL. EDUC. CODE §44301 (West 2003).

83. *See* CCTC Credential Handbook (2000 Version), *at* http://www.rocklin.k12.ca.us/hr/credential/credHand.pdf (last visited Apr. 10, 2003).

84. *See* CCTC, RICA, *supra* note 62.

85. *Id.*

86. *See* CAL. EDUC. CODE § 44225(m) (West 2003).

87. *See* CCTC, RICA, *supra* note 62.

quired to have done. None of the alternative credentials require that teachers have had the opportunity to work under the direct daily supervision of a practicing veteran teacher available to demonstrate effective strategies. Thus, while it is possible that some individuals working in California on less-than-full credentials, permits, or waivers have the preparation and teaching skill needed to teach students to the state's learning standards, there are few guarantees that non-credentialed teachers have the depth of content knowledge and the breadth of teaching skills needed to assure access to equal educational opportunities for the diverse set of learners found in California classrooms.

Although large numbers of teachers are allowed to practice without satisfying the standards the state has set for their competence, beginning in 2006, students in California will not be allowed to graduate unless they fulfill the state's standards for their learning. There are no exceptions to this policy for students. The latitude granted to teachers as to whether they will meet the state's standards is not granted to children, despite the fact that these teachers' abilities to a large extent will determine students' chances of success, not only in school but in life.

IV. THE IMPORTANCE OF WELL-QUALIFIED TEACHERS

Strong evidence suggests that teachers affect student learning. Recent studies using value-added student achievement data have found that student achievement gains are much more influenced by a student's assigned teacher than other factors like class size and heterogeneity.[88] Students who are assigned to several highly effective teachers in a row have significantly greater gains in achievement than those who are assigned to several ineffective teachers in sequence.[89] These influences can be quite large and also can exert residual effects in later years; that is, having a high quality teacher in one year increases learning, not only in that year, but also in subsequent years. A recent analysis by Rivkin, Hanushek, and Kain attributes at least seven percent of the total variance in test-score gains to differences in teach-

88. See S. Paul Wright et. al., *Teacher and Classroom Context Effects on Student Achievement: Implications for Teacher Evaluation*, 11 J. PERSONNEL EVALUATION IN EDUC. 57, 61-63 (1997).

89. *See* WILLIAM L. SANDERS & JUNE C. RIVERS, UNIV. OF TN. VALUE-ADDED RES. & ASSESSMENT CENTER, CUMULATIVE AND RESIDUAL EFFECTS OF TEACHERS ON FUTURE STUDENT ACADEMIC ACHIEVEMENT 7 (1996).

ers.[90]

A variety of teacher experiences and attributes appear to contribute to the effect teachers have on their students' learning and achievement. Looking across studies, several aspects of teachers' qualifications have been found to bear some relationship to student achievement. These include teachers' 1) general academic and verbal ability; 2) subject matter knowledge; 3) knowledge about teaching and learning as reflected in teacher education courses or preparation experiences; 4) teaching experience; and 5) the combined set of qualifications measured by teacher certification, which includes most of the preceding factors. The size of these relationships varies from study to study, depending on measures used, other variables examined, content area and grade level of teachers, and other factors. There are, of course, many other attributes that matter for teaching, such as enthusiasm, perseverance, flexibility, and concern for children that have been evaluated in various studies.[91] There are also many specific teaching practices that make a difference for student learning as well.[92] These aspects of teacher competence are reviewed below.

A. *Certification Status*

Certification or licensing status is the state's legal vehicle for establishing competence for members of professions, including teaching. Licensing and certification requirements are meant to represent the minimum standard for responsible practice.[93] As a measure of teacher qualifications, the requirements for certification include measures of many of the other variables noted above, including basic skills and general academic ability, knowledge about subject matter, knowledge about teaching and learning, and some teaching experience.[94] In most states, candidates for teaching must earn a minimum grade point average and/or achieve a minimum test score on tests of basic skills,

90. *See generally* STEVEN G. RIVKIN ET AL., NAT'L BUREAU OF ECON. RESEARCH, TEACHERS, SCHOOLS AND ACADEMIC ACHIEVEMENT (2000).

91. *See* DEL SCHALOCK, AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, RESEARCH ON TEACHER SELECTION, *in* 7 REV. OF RESEARCH IN EDUC. 364 (D.C. Berliner ed., 1979).

92. *See generally* THOMAS L. GOOD & JERE E. BROPHY, CONTEMPORARY EDUCATIONAL PSYCHOLOGY (5th ed. 1995).

93. *See generally* LINDA DARLING HAMMOND ET AL., A LICENSE TO TEACH: RAISING STANDARDS FOR TEACHING (Jossey-Bass Inc. 1999).

94. *See generally id.*

general academic ability, or general knowledge in order to be admitted to teacher education or gain a credential.[95] In addition, they must secure a major or minor in the subject(s) to be taught and/or pass a subject matter test, take specified courses in education and, in some cases, pass a test of teaching knowledge and skill.[96] In the course of teacher education, candidates are typically judged on their teaching skill, professional conduct, and the appropriateness of their interactions with children during the student teaching experience.[97] Since there are limits on the number of years a person can teach without earning a credential, there also tends to be a correlation between teaching experience and credential status.[98]

To earn a clear credential in California, teachers must possess a bachelor's degree from an accredited college or university, pass the California Basic Educational Skills Test (CBEST), demonstrate subject matter competence through either completion of specified courses in the content area(s) to be taught or passage of one or more tests of content knowledge.[99] In addition, teachers must complete at least thirty semester units in education.[100] This training includes study of content pedagogy, curriculum, assessment, strategies for teaching reading, English language development, special needs learners, health education, technology use, and many other areas. Furthermore, teachers must have some experience in the classroom through student teaching or an internship in order to earn a credential.[101]

1. *California Studies*

Several recent studies in California have found strong relationships between measures of teacher qualifications and stu-

95. *See generally id.*

96. *See generally id.*

97. *See generally id.*

98. Linda Darling-Hammond et al., *Does Teacher Certification Matter? Evaluating the Evidence*, 23 EDUC. EVALUATION AND POL'Y ANALYSIS 57 (2001).

99. For single subject credentials, candidates who have not completed an approved subject matter program must take and pass two subject matter tests in their field: the SSAT and the Praxis. For multiple subject credentials, candidates who have not completed an approved subject matter program must take and pass the MSAT. All candidates must also take and pass the RICA, a test of knowledge about the teaching of reading. *See* CCTC, MULTIPLE & SINGLE SUBJECT CREDENTIALS, *supra* note 51.

100. This requirement was once limited to post-baccalaureate training but can now be incorporated into an undergraduate program.

101. *See* CCTC, MULTIPLE & SINGLE SUBJECT CREDENTIALS, *supra* note 51.

dent achievement, with teacher certification status and experience being among the strongest and most consistent predictors of student achievement, in addition to student socioeconomic status. Certification status generally shows a larger effect size than experience in these studies. As noted below, factors like teachers' level of general education (e.g., possession of a master's degree rather than a bachelor's degree) appear as occasional, but less strong contributors to student achievement. These general patterns are seen in a number of studies conducted outside of California as well.

A recent study of student achievement across more than 7,000 California schools by the Public Policy Institute of California found that teacher qualifications variables were the strongest predictors of student achievement in a regression analysis, after controlling for the substantial effects of socioeconomic status.[102] The report noted:

> Among the school resource measures, the level of teacher experience and a related measure - the percentage of teachers without a full credential - are the variables most strongly related to student achievement. Teachers' level of education, measured by the percentage of teachers with a master's degree or higher, in some cases is positively and significantly related to test scores but not nearly as uniformly as the measures of teacher experience. Similarly, a higher percentage of teachers with only a bachelor's degree within a given grade is negatively related to student achievement.[103]

This study joins a number of others in finding that, among school resources, teacher qualifications often appear to have the greatest influence on what students learn.[104] In addition, like other studies, Betts and colleagues found that teacher qualifications are unequally allocated to students by race, income, and location.[105] These unequal distributions are further discussed below.

In a recent school level analysis of test performance in 795 California high schools, Fetler found a significant negative relationship between average student scores on the state mathematics examination and the percentage of teachers on emergency

102. *See* BETTS ET AL., *supra* note 8.
103. *Id.* at xxii.
104. *See id.*
105. *See id.* at xxiv.

permits.[106] He also found a smaller positive relationship between student scores and teacher experience levels, after controlling for student poverty and test participation rates.[107] The author concluded that, "[a]fter factoring out the effects of poverty, teacher experience and preparation are significantly related to achievement."[108]

More recently, Goe examined the relationship between student and teacher characteristics for nearly 6,400 schools and schools' scores on California's Academic Performance Index (API), which is calculated based on average test scores and score gains on the SAT-9 tests.[109] Like Fetler, Goe found that, among school resources, the strongest predictors of API rankings were a school's proportion of teachers on emergency permits and the proportion of first-year teachers, both showing a significant negative relationship to school-wide student achievement after student characteristics were controlled.[110] She also found a strong relationship between teacher qualifications and the race, ethnicity, language background, and income of students and families.[111]

These studies, like many others, find very strong influences of student socioeconomic status on student achievement. These effects appear not only to be a function of the non-school resources for learning (including health and welfare supports) that may be represented in homes and communities, but also a function of the fact that many school resources are inequitably distributed among students in ways that are strongly associated with race and class, including the numbers of teachers and size of classes, materials, books, equipment, facilities, and course offerings. The PPIC study found that resource disparities in California are compounded for the most disadvantaged schools. As the authors note, "By and large, if students at a given school have relatively little of one resource, they are likely to have relatively little of other resources as well."[112] Thus, the influences many studies have observed of socioeconomic status on student achievement may represent in part the influences of unequally

106. *See generally* Fetler, *supra* note 28.
107. *See id.*
108. *See id.* at 12.
109. *See* Goe, *supra* note 28.
110. *See id.*
111. *See id.*
112. *See* BETTS *supra* note 28, at 55.

allocated school resources on students' opportunities to learn.

Many principals and teachers in California, who are exposed to unprepared teachers to a degree unusual in the country, are particularly forceful in their conviction that teacher certification is an important indicator of teaching ability. Principals and teachers interviewed for the *Williams* case noted that credentials are a high priority for them when hiring teachers because the credential shows that teachers have education training of the kind they find valuable.[113]

In their experience, credentialed teachers "know what to do" and require less assistance,[114] have had mentored student teaching and methodology classes,[115] are better prepared,[116] and have fewer problems with classroom management and teaching strategies.[117] They compare credentialing "as important to teaching as a driver's license is to driving a car"[118] and as essential as

113. *See infra* notes 127-131 and accompanying text.

114. Deposition of Marcia Hines at v. 3, 496: 13-25, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Hines-m3.pdf (last visited Apr. 10, 2003).

115. Deposition of Steven Muzinich at v. 1, 63:20-64, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Muzin-s1.pdf (last visited Apr. 10, 2003); Deposition of Margaret Roland at v. 1, 203: 17-18, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Rolan-m1.pdf (last visited Apr. 10, 2003); Deposition of Lawrence Lane at v. 2, 74:20-75:14, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Lane-l2.pdf (last visited Apr. 10, 2003); Deposition of Amy Salyer at v. 1, 134:25-135:9, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Salye-a1.pdf (last visited Apr. 10, 2003).

116. Deposition of Jose Banda at v. 1, 137:20-138:10, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Banda-j1.pdf (last visited Apr. 10, 2003); Deposition of Muzinich at v. 1, 63:20-64:3; Deposition of Hines at v. 3, 496:13-25; Deposition of Roland at v. 1, 31:24-33:5; Deposition of Carla Walden at v. 1, 251:4-20, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Walde-c1.pdf (last visited Apr. 10, 2003); Deposition of Lane at v. 2, 74:20-75:14; Deposition of Shannon Carey at v. 1, 228:8-229:2, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Carey-s1.pdf (last visited Apr. 10, 2003); Deposition of Emmanuel Medina at v. 2, 370:20-371:4, 375:17-377:6, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Medin-e2.pdf (last visited Apr. 10, 2003); Deposition of Nicolas Rodriguez at v. 1, 99:9-23, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Rodri-n1.pdf (last visited Apr. 10, 2003).

117. Deposition of Salyer at v. 1, 138:23-139:3; Deposition of Rodriguez at v. 1, 99:9-23.

118. Deposition of Roland at v.1, 34:23-26.

such training is to the qualifications of a dentist.[119] As one principal noted regarding the importance of effective preparation, including student teaching,

I think a lot of people think they can be a teacher because they've gone to school, and I don't necessarily think that that is a fact. For a person to come to the educational setting, they need to be armed, if you will, with various strategies that they are going to use in the classroom.... So I would like to see future teachers truly have a year of methodology classes and observation and student teaching under a quality master teacher where they can try things.... [and] effectively evaluate what they are doing....[120]

Friedlaender & Frenkel observed in their study of seventeen hard-to-staff California schools that "schools or districts consider credentialed teachers to be a 'valued commodity' and quickly hire the best qualified credentialed teachers."[121] Principals and teachers attributed the shortages of such teachers to low salaries, poor working conditions, inadequate district or school recruitment, the after-effects of California's class size reduction initiative, and difficult neighborhoods where living conditions are poor and housing is in short supply.[122] The authors noted that uncredentialed teachers who were hired because of these conditions often commented on their own lack of preparation.[123] For example, at one school, the researchers wrote of three teachers they interviewed (two interns and one emergency permit teacher):

> All three teachers asserted that they did not feel adequately prepared to teach in their current teaching assignment. They agreed that they had a difficult time with curriculum development and implementation as well as classroom management. In addition, they expressed feeling challenged by all of their "administrative responsibilities such as standardized testing, assessment, and the planning of field trips. All three teachers ascribed their inadequacy to the fact that they had not participated in a formal teacher education program before entering the profession.... All of the teachers also

119. Declaration of Joshua Pechthalt at v. 1, 135:10-20, Williams, et al. v. California (No. 312236) (on file with author)

120. Deposition of Lane at v. 2, 74:20-75:14.

121. DIANE FRIEDLAENDER & STEVE FRENKEL, THE ROCKEFELLER FOUNDATION, SCHOOL EQUITY STUDY DOCUMENTATION 3 (2002).

122. *See id.*

123. *See id.*

> spoke extensively about the fact that most of their students are English Learners (most of whom speak Spanish). The teachers agreed that they were not adequately trained to teach this population of students. They also seemed to resent the fact that the students and their families are not proficient in English because it creates "double the workload" for them as they planned instruction and carried out the required assessment measures.[124]

Similarly, the researchers observed of another school: "In one urban middle school, all three teachers interviewed not only lacked credentials but had received only six weeks of teacher training from the Teach for America program. While school administrators provided helpful curricular ideas, these teachers' lack of teaching experience dramatically limited their effectiveness as educators."[125]

Finally, they observed more than fifty teachers they interviewed overall:

> [A]cross most schools, teachers of English Language Learners (ELL) felt least prepared. For example, one teacher explained that she was assigned a sheltered class when she first came to the school and thought it was for foster care students from homeless shelters. Several reading teachers also had no preparation in reading instruction and teaching students who were reading well below grade-level. According to both teachers and administrators, teachers' inexperience accelerates teacher burnout . . . .[126]

Teachers deposed for this case described how teaching alongside uncredentialed teachers is a problem not only for these novices without training, but also for prepared teachers who must deal with the spillover effects of the lower levels of competence untrained teachers possess:

> [One teacher] was considering a career change and came in and taught our special ed. class for a year. During the time she was in that class, she was taking one or two courses out at San Francisco State to get her credential in teaching special ed., but she wasn't technically qualified and there was no one on the site who was able to advise her or train her or support her appropriately. She had a pretty miserable year and she admitted candidly to many of us that she felt underqualified, sometimes unqualified and absolutely did not

124. *Id.* at 16 (Case RE3).
125. *Id.* at 4.
126. *Id.* at 5.

> know what she was doing in there, so it was hard watching her teach. You could tell she was very stressed and very strained. As a peer, it was hard to watch her and it was hard to watch her kids function in the room with somebody who was not experienced and qualified.[127]

> [I]t was a topic that was . . . discussed at the lunch table about the fact we had a class that had had so many substitutes and had had an uncredentialed teacher who was not able to handle the situation and ended up not returning and the kids were going to struggle and that the . . . teachers who received them the next year would probably have a difficult time with those students because of what they had been through the prior year.[128]

In addition to many principals who described their desire to hire credentialed teachers because they know how to manage classes and plan and teach a curriculum, teachers described how what is learned in a credential program makes a difference for their skills and those of their colleagues:

> [W]hen you get your credential you go through a battery of classes that teaches you how and what to teach. And, generally being prepared for a profession makes you better at it. I also have the added perspective now of having worked both as a mentor teacher to these uncredentialed teachers and as supervisor to students who are getting their credential at UC Berkeley. And, so, I actually have firsthand knowledge of the types of courses and conversations that they have preservice and not while teaching. And, I think that credentialing classes deal with a lot of issues that come up in the first year of teaching that can either be dealt with on the fly or dealt with thoughtfully before one enters the classroom.[129]

> I would say my experience was that teachers who had not been through credential programs had more concerns about classroom management and about effective methods for delivering instruction to the student population at our school

127. Deposition of Lili Malabed at v. 2, 309: 2-17, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Malab-l2.pdf (last visited Apr. 10, 2003).

128. Deposition of Amy Salyer at v. 1, 168: 6-15, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Salye-a1.pdf (last visited Apr. 10, 2003).

129. Deposition of Shannon S. Carey at v. 1, 228: 13-229: 2., Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Carey-s1.pdf (last visited Apr. 10, 2003).

than teachers who had been through credential programs.[130]

Teachers who entered teaching without preparation provide the most eloquent assessment of what they learned from a teacher education program:

> I believe that emergency-credentialed teachers, generally speaking, are not going into classrooms with enough tools, nor are they going in with appropriate lenses for looking at the classroom.... [T]he best way to do this is to compare myself as a teacher now and myself as a teacher back then. Upon entering... my teacher-credentialing program, I've gained a lot of tools how to better address students' needs. As an un-credentialed teacher, I was not aware that I should take literacy into a large consideration into their education. As an un-credentialed teacher, I wasn't emphasizing reading as a skill as the very backbone of communication to my students. As an un-credentialed teacher, I didn't have tools for discipline. I didn't have tools for what good discipline is and what bad discipline looks like. I wasn't taking into consideration the long-term effects of how my classroom policies shifted. As an uncredentialed teacher, I didn't have great record-keeping skills. As an uncredentialed teacher, I had no idea how students were developing biologically, socially during this high time of change. As an uncredentialed teacher, I hadn't looked at or I hadn't compared formally what good teaching looks like and what bad teaching looks like and I've since done so, looking at teachers internationally and just across the state. I didn't have the tools. I wasn't thinking about multiple representations. I wasn't thinking about multiple intelligences. I wasn't thinking about equity. I wasn't thinking about gender equity, racial equity while I was teaching and all of these things really stem from my experience in my credential program and so with these lenses, I'm better able to serve my students. But before those lenses were available to me, I don't think I was doing an adequate job....[131]

130. Deposition of Amy Salyer at v. 1, 138:23-139:3., Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Salye-a1.pdf (last visited Apr. 10, 2003).

131. Deposition of Emmanuel Medina at v. 2, 383:16-20, 375:24-377:6., Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Medin-e2.pdf (last visited Apr. 10, 2003).

2. *National Studies*

Studies using national data and other state data sets have found significant relationships between teacher certification measures and student achievement at the levels of the individual teacher, the school, the school district, and the state.[132] The convergence of findings in analyses using different units of analysis reinforces the strength of the inferences that might be drawn from any single study, since analyses at different levels of aggregation can produce different results. On the one hand, disaggregated data can exhibit greater measurement error; on the other hand, some argue that aggregated data may overestimate the effects of school input variables if key variables are omitted.[133] Of course, omitted variables can bias results at any level of aggregation. When interpreting the evidence on an issue, it is important to consider whether consistent results are found at different levels of aggregation.

A large-scale study of high school students' performance in mathematics and science using data on more than 3,400 teachers from the National Educational Longitudinal Studies of 1988 (NELS) found that fully-certified teachers have a statistically significant positive impact on student test scores relative to teachers who are not certified in their subject area, as do teachers who hold a degree in mathematics or mathematics education.[134] The same trends were true in science, but the influences were somewhat smaller.[135] Furthermore, in states with licensing examinations, newly trained teachers (those with probationary licenses granted to fully prepared new entrants) showed a strong positive influence on student achievement.[136] Goldhaber and Brewer report:

[W]e find that the type (standard, emergency, etc.) of certification a teacher holds is an important determinant of student outcomes. In mathematics, we find the students of teachers who are either not certified in their subject (in these data we cannot

132. *See* Goldhaber & Brewer, *supra* note 29, at 129; *see also* Parmelee P. Hawk et al., *Certification: It Does Matter*, J. OF TCHR. EDUC., May-June 1985, at 13-15; BETTS ET AL., *supra* note 28. *See also* Fetler, *supra* note 28; Ferguson, *supra* note 29; *see also* Strauss & Sawyer, *supra* note 29); Linda Darling-Hammond, *Teacher Quality*, *supra* note 29.

133. *See* Eric A. Hanushek, et al., *Aggregation and the Estimated Effects of School Resources*, 78 REV. OF ECON STAT 611-27 (1996).

134. See Goldhaber & Brewer, *supra* note 29, at 129, 139.

135. *Id.*

136. *Id.* at 140.

distinguish between no certification and certification out of subject area) or hold a private school certification do less well than students whose teachers hold a standard, probationary, or emergency certification in math. Roughly speaking, having a teacher with a standard certification in mathematics rather than a private school certification or a certification out of subject results in at least a 1.3 point increase in the mathematics test. This is equivalent to about 10% of the standard deviation on the 12th grade test, a little more than the impact of having a teacher with a BA and MA in mathematics. Though the effects are not as strong in magnitude or statistical significance, the pattern of results in science mimics that in mathematics. Teachers who hold private school certification or are not certified in their subject area have a negative (though not statistically significant) impact on science test scores.[137]

Correlational studies like the one above can suggest relationships, but experimental or matched comparison designs are needed to examine directly the outcomes of different groups of teachers. A matched comparison group study of 36 middle school mathematics teachers and 826 students in North Carolina, in which teachers were matched by years of experience and school setting, found that students of fully certified mathematics teachers experienced significantly larger gains in achievement than those taught by teachers not certified in mathematics.[138] The differences in student gains were greater for algebra classes

137. *Id.* at 139. The study also found that students of a small number of science teachers who held temporary or emergency certification (twenty-four out of the 3,469 teachers in the overall sample) did no worse than the students of certified teachers, although they, too, did better than the students of uncertified teachers. *See id.* Another analysis of these data showed that about two-thirds of the teachers in this sample holding temporary or emergency certificates were experienced and had subject matter and education training comparable to that of the certified teachers, suggesting that they were likely to be licensed teachers from out-of-state who held temporary licenses while securing a new state license or experienced teachers teaching out of their main field. For those with similar training, it is not surprising that their students did about as well as those of certified teachers holding similar qualifications. Linda Darling-Hammond et al., *Does Teacher Certification Matter?*, *supra* note 98, at 60. Only a third of the NELS sample teachers on temporary/emergency licenses were new entrants with little education training, such as those who enter via some alternate routes in California and elsewhere. The students of this subsample of teachers had smaller achievement gains than those of the more experienced, traditionally trained teachers in an analysis of co-variance that controlled for pre-test scores, content degrees, and experience. *See id.*

138. *See* Hawk et al., *supra* note 132, at 15.

than general mathematics.[139] The difference in certification status between the groups indicated differences in their background coursework in both mathematics and mathematics teaching methods.[140]

School level studies like those conducted in California have produced similar results elsewhere.[141] Examining data on schools in Texas, Fuller found that students in schools with greater proportions of certified teachers are significantly more likely to pass the Texas state achievement tests (TAAS), after controlling for student socioeconomic status and teacher experience.[142] In one set of studies, Fuller found that the likelihood of elementary school students in grades 3, 4, and 5 passing all subtests of the TAAS was greater in schools with higher proportions of certified teachers, controlling for teacher experience.[143] He also found that gains in pass rates also were related to the proportion of properly certified teachers, with prior achievement and student demographics taken into account.[144] The differences were significant for Hispanic students and economically disadvantaged students.[145] In a second set of studies, Fuller found that the percentage of properly certified Algebra I teachers in a school was positively and significantly associated with gains in student achievement as measured by the Algebra end-of-course examination for all students, after controlling for student and school characteristics and prior test scores.[146]

Some studies have gone beyond measures of general certification status to include teachers' licensure test scores, which reveal the relative ranking of candidates on assessments that are part of the certification process, rather than merely whether they have passed or failed.[147] In an analysis of nearly 900 Texas

139. *See id.* at 14.

140. *See id.* at 15.

141. *See* ED FULLER, CHARLES A. DANA CENTER, UNIV. OF TEXAS AT AUSTIN, DO PROPERLY CERTIFIED TEACHERS MATTER? A COMPARISON OF ELEMENTARY SCHOOL PERFORMANCE ON THE TAAS IN 1997 BETWEEN SCHOOLS WITH HIGH AND LOW PERCENTAGES OF PROPERLY CERTIFIED REGULAR EDUCATION TEACHERS (1998); Ed Fuller, Do Properly Certified Teachers Matter? Properly Certified Algebra Teachers and Algebra I Achievement in Texas (April 2000) (paper presented at the annual meeting of the American Educational Research Association).

142. *See id.*

143. *See* Fuller, *supra* note 141.

144. *See id.*

145. *See id.*

146. *See id.*

147. It is important to note that these studies were based on individuals already

school districts that controlled for student background and district characteristics, Ronald Ferguson found that combined measures of teachers' expertise—scores on a certification examination, master's degrees, and experience—accounted for more of the inter-district variation in students' reading and mathematics achievement (and achievement gains) in grades 1 through 11 than student socioeconomic status.[148] An additional, smaller contribution to student achievement was made by lower pupil-teacher ratios and smaller schools in the elementary grades.[149] Altogether, the school variables accounted for about the same proportion of total variance as the student background variables: poverty, race, language background, proportion of single-parent households, and adult education levels in the community.[150]

Of the teacher qualification variables, the strongest relationship was found for scores on the state licensing examination, a test that is described by the test-maker as measuring basic communication skills, research skills, and teaching knowledge.[151] The effects were so strong, and the variations in teacher expertise so great, that after controlling for socioeconomic status, the large disparities in achievement between black and white students were almost entirely accounted for by differences in the qualifications of their teachers.[152] Ferguson also found that every additional dollar spent on more highly qualified teachers netted greater increases in student achievement than did less in-

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in the teaching force, most or all of whom were already certified and had met the other requirements of subject matter background and education courses, student teaching, and test passage. They were conducted using data from the 1980s, when most teachers were fully certified and states admitted few teachers to practice if they had failed a licensure test. Thus, the effect of teacher licensing test score differences—which may capture a range of academic and teaching abilities—were evaluated on top of the pre-existing knowledge and skill represented by having passed the test and completed preparation for a license. The studies were not designed to evaluate the effects of test score differentials below this threshold.

148. *See* Ferguson, *supra* note 29, at 475-77.

149. *See id.*

150. *See id.* Ferguson goes on to report that "[a]fter the first grade, teacher scores on the TECAT account for about one fifth to one quarter of all variation across districts in students' average scores on the TEAMS exam," *id.* at 475, "experience accounts for a bit more than ten percent of the interdistrict variation in student test scores" *id.* at 476; and "the percentage of teachers who have master's degrees accounts for about five percent of the variation in student scores across districts for grades one through seven. Master's degrees have no predictive power after the seventh grade." *Id.* at 477.

151. *See id.* at 471-72.

152. *See id.* at 466, 475.

structionally focused uses of school resources.[153]

Another study found that student test performance in North Carolina districts was strongly associated with teachers' average scores on the most commonly used teacher licensing examination, the National Teacher Examinations.[154] Taking into account per-capita income, student race, district capital assets, student plans to attend college, and pupil/teacher ratios, teachers' test scores had a strikingly large effect on students' failure rates on the state competency examinations: a 1% increase in teacher quality (as measured by NTE scores) was associated with a 3% to 5% decline in the percentage of students failing the exam.[155] This effect was much larger than the effect of student race.[156] The authors' conclusion is similar to Ferguson's:

> Of the inputs which are potentially policy-controllable (teacher quality, teacher numbers via the pupil-teacher ratio and capital stock) our analysis indicates quite clearly that improving the quality of teachers in the classroom will do more for students who are most educationally at risk, those prone to fail, than reducing the class size or improving the capital stock by any reasonable margin which would be available to policy-makers.[157]

Finally, Darling-Hammond used state-level data from the National Assessment of Educational Progress and the Schools and Staffing Surveys to examine test score differentials in reading and mathematics across states, controlling for student poverty and language status.[158] In regression estimates, the study found that measures of teacher preparation and certification were the strongest correlates of average student achievement in reading

153. *See id.* at 485.

154. *See* Strauss & Sawyer, *supra* note 29, at 41, 47. The NTE Core Battery, in use in North Carolina at that time, including components measuring basic skills, general knowledge, and professional teaching knowledge. *See id.*

155. *See id.* at 41.

156. *See id.* at 47. The authors use the district average NTE score as their measure of teacher quality. Thus, a 1% increase in the district average NTE score for teachers was associated with a 3-5% decrease in the district fail rate on the exams. The authors found that teacher's NTE scores mattered more for rates of failure on the exam than for average student achievement, and that in both sets of estimates, teacher quality mattered more to these outcomes than the proportion of black students in the district—which had a noticeable but smaller effect. *Id.* at 44, 47. They note that "the impact of teacher quality on the rate of failure varies from an elasticity of 5.02 to one of 6.30, while the elasticity of the effect of race on the rate of failure varies between 0.060 and 0.089. *Id.* at 44.

157. *Id.* at 47.

158. *See* Darling-Hammond, *Teacher Quality*, *supra* note 29.

and mathematics, while class size had very modest additional effects.[159] The most strongly significant predictor was a state's proportion of "well-qualified teachers," defined as the proportion holding both full certification and a major in the field taught.[160] The proportion of teachers with masters degrees exerted an additional small positive effect on achievement in five of six estimates and the proportion of emergency credentialed teachers in the state exerted an additional small, negative effect on student achievement.[161] The study concluded that:

> [S]tates interested in improving student achievement may be well-advised to attend, at least in part, to the preparation and qualifications of the teachers they hire and retain in the profession. It stands to reason that student learning should be enhanced by the efforts of teachers who are more knowledgeable in their field and are skillful at teaching it to others. Substantial evidence from prior reform efforts indicates that changes in course taking, curriculum content, testing, or textbooks make little difference if teachers do not know how to use these tools well and how to diagnose their students' learning needs.[162]

B. *Debates about the Importance of Teacher Education and Certification*

Despite consistent evidence that the knowledge captured by teacher certification status is significantly related to student achievement, there are those who recently have argued that teacher education and certification have no effect on teacher effectiveness, and, further, that certification of teachers should be abandoned by states in order to remove "regulatory barriers" to teaching.[163] These arguments are linked to arguments against state requirements for teacher preparation, especially for those who will teach students in urban districts,[164] against the professionalization of teaching—which is seen as a barrier to charters

159. *See id.*
160. *See id.*
161. *See id.*
162. *Id.*
163. *See, e.g.*, Dale Ballou & Michael Podgursky, *Reforming Teacher Training and Recruitment*, GOVERNMENT UNION REV. 1-47 (1997), *available at* http://www.psrf.org/gur/v174_art.jsp (last visited Apr. 10, 2003); KATE WALSH, THE ABELL FOUNDATION, TEACHER CERTIFICATION RECONSIDERED: STUMBLING FOR QUALITY, A REJOINDER (2001), *available at* http://www.abellfoundation.org.
164. *See supra* note 175.

and other forms of school choice,[165] and against greater investments in public school funding and resources.[166]

For example, Kate Walsh argued in a paper written for the Abell Foundation that proponents of securing fully credentialed teachers for Baltimore, MD schoolchildren were misguided.[167] The report maintains that disparities in qualified teachers between Baltimore and other districts are not a problem because teacher certification does not mean that teachers are more effective, and thus it is not a problem that many teachers in inner city schools are not certified.[168] Walsh cited an earlier paper by Hanushek that argued against investments in smaller class sizes or higher salaries in poorly funded Baltimore, in which he contends that Baltimore City would not benefit from additional resources as much as it could benefit by better school management.[169] The likely outcome of these arguments would be continued inequality in funding, depressed salaries for teaching in high-need areas, and continued lack of access for poor children to a stable teaching force of well-qualified teachers.

Those who argue against teacher education and certification assert that 1) the research linking teacher education or certification to student learning is weak; 2) the aspects of teacher abilities that affect student achievement (primarily verbal ability and subject matter knowledge) are not associated with teacher education or certification; and 3) free market strategies (e.g., elimination of requirements for certification) will increase supply and allow principals to staff schools with better teachers.[170] Walsh and other authors cited above seek to support their argument by dismissing studies that find evidence that knowledge about teaching makes a different for teacher performance, claiming that studies that have been cited for this finding are too old, too small, too highly aggregated, or are not about certification after all, even if their authors claim they are.[171]

As documented elsewhere, these claims are made by ignoring much of the evidence that exists regarding these questions (including many of the studies summarized here); misrepresent-

165. *See* Ballou & Podgursky, *supra* note 163, at 44.
166. *See* Hanushek, *supra* note 133, at 611.
167. WALSH, *supra* note 163.
168. *Id.*
169. ERIC A. HANUSHEK, MARYLAND STATE DEPT. OF EDUC., SCHOOL RESOURCES AND ACHIEVEMENT IN MARYLAND (1996).
170. WALSH, *supra* note 163.
171. *Id.*

ing the methods and findings of some studies, as well as the views of their authors; discounting many studies based on their age, sample size, or publication venue (but citing the same studies and others of similar age, size, or publication status when the findings are viewed as compatible with the authors' arguments); and making claims about the effectiveness of uncertified teachers that are not supported by research.[172] For example, for her proposition that "new teachers who are certified do not produce greater student gains than new teachers who are not certified," Walsh cited seven studies, none of which provide any support for this proposition, and five of which actually provide evidence that contradicts this claim.[173]

In addition, the notion that eliminating certification requirements will solve teacher supply problems ignores the fact that under-resourced schools with low salaries and poor working conditions do not attract high quality teachers even when they can freely hire individuals who are not credentialed. For example, as noted earlier, principals in California's disadvantaged schools perceive no barriers in hiring untrained and uncredentialed teachers, but find low salaries and poor working conditions to be major obstacles to hiring the prepared and credentialed teachers they prefer.[174] There also is strong evidence from New York that non-competitive salaries in New York City—where for many years there has been no effective bar to hiring thousands of uncertified teachers annually—produce a less well-qualified teaching force by any definition of quality, and that multiple indicators of quality point in the same direction.[175] Finally, the argument that eliminating certification stan-

172. Linda Darling-Hammond et al., *Does Teacher Certification Matter?*, *supra* note 98, at 58-59; Linda Darling-Hammond et al., *Variation in Teacher Preparation: How Well Do Different Pathways Prepare Teachers to Teach?*, 53 J. TCHR. EDUC. 286, 288-89 (2002).

173. *See generally* Darling-Hammond et al., *Variation in Teacher Preparation*, *supra* note 172.

174. *See, e.g.*, FRIEDLAENDER & FRENKEL, *supra* note 121.

175. Researchers in New York have found that schools with less qualified teachers by one measure (e.g., certification status and certification exam scores) tend to have less qualified teachers by other measures (e.g., selectivity of colleges, degree status, tenure). *See* SUSANNA LOEB, EDUCATION FINANCE RESEARCH CONSORTIUM, HOW TEACHERS' CHOICES AFFECT WHAT A DOLLAR CAN BUY: WAGES AND QUALITY IN K-12 SCHOOLING, *in* The Teacher Workforce: Symposium Proceedings 8 (2001); HAMILTON LANKFORD, A DESCRIPTIVE ANALYSIS OF THE NEW YORK STATE AND NEW YORK CITY TEACHING FORCE 8-9 (1999); Hamilton Lankford et. al, *Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis*, 24 EDUC. EVALUATION & POL'Y ANALYSIS 37, 38, 44, 49 (2002).

dards will result in better quality teachers ignores the fact that certification standards are the major lever for ensuring the verbal ability and subject matter knowledge of candidates that antagonists of certification argue are important for teaching.

To be sure, certification is merely a proxy for the subject matter knowledge and knowledge of teaching and learning embodied in courses and in supervised student teaching. It is true that certification is a relatively crude measure of teachers' knowledge and skills, since the standards for subject matter and teaching knowledge embedded in certification have varied across states and over time, and are differently measured and differently enforced from place to place. The quality of preparation in both university programs and other alternative programs has varied as well, although a number of states have made substantial headway recently in strengthening teachers' preparation and reducing this variability.[176] Given the crudeness of the measure, it is perhaps remarkable that so many studies have found significant effects of teacher certification on student achievement and that these effects remain significant when other student characteristics and teacher qualifications measures have been taken into account.

One claim made by those who would reduce or eliminate requirements for teacher preparation is that candidates learn little in professional education courses and may be dissuaded from entering the profession by education requirements.[177] Citing critiques of preparation that are thirty-five years old, these authors do not acknowledge recent studies that have found graduates rating themselves well prepared by their teacher education programs[178] and significantly better prepared than those who lacked

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These strong correlations suggest that schools are not trading off one type of qualification for another in their hiring practices. Instead, some schools simply employ more qualified teachers than other schools. The differences across schools in teacher qualifications are related to measurable characteristics of the schools. Urban schools differ in the qualifications of their teachers from suburban and rural schools; schools with high proportions of minority students differ from schools with low proportions of minority students; schools with many children in poverty differ from schools with few children in poverty.

176. *See generally* LINDA DARLING HAMMOND ET AL., A LICENSE TO TEACH, *supra* note 93.

177. Ballou & Podgursky, *supra* note 163.

178. KENNETH R. HOWEY ET AL., AMERICAN ASS'N OF COLLEGES FOR TEACHER EDUCATION, RATE VII: TEACHER PREPARATION IN THE URBAN CONTEXT 24-29 (1994); KENTUCKY INSTITUTE FOR EDUCATION RESEARCH, THE PREPARATION OF TEACHERS FOR KENTUCKY SCHOOLS: A SURVEY OF NEW TEACHERS (1997).

preparation.[179]

Certification is not a perfect measure of teacher quality. Continuing improvement in the quality of tests, courses, and institutions is the subject of study and action across the country.[180] As a matter of law and as a matter of rational social policy, the solution to flaws that may be perceived in a state's certification system is not to eliminate or ignore these requirements, but to improve them. Certification standards, in teaching as in other professions, are a means to encourage teachers to gain knowledge and to enable students access to knowledgeable teachers. If teacher knowledge and skill about both content and teaching methods are important, as substantial evidence suggests they are, policymakers have an obligation to work to improve preparation and certification standards so that they increasingly represent what teachers need to know and do in order to be successful with diverse students.

As Levin notes, certification is a critically important exercise in the economics of information that should be a target of continual improvement:

> [T]he facts that we expect the schools to provide benefits to society that go beyond the sum of those conferred upon individual students, that it is difficult for many students and their parents to judge certain aspects of teacher proficiency, and that teachers cannot be instantaneously dismissed, mean that somehow the state must be concerned about the quality of teaching. It cannot be left only to the individual judgments of students and their parents or the educational administrators who are vested with managing the schools in behalf of society. The purpose of certification of teachers and accreditation of the programs in which they received their training is to provide information on whether teachers possess the minimum proficiencies that are required from the teaching function. Because this is an exercise in the provision of information, it is important to review the criteria for setting out how one selects the information that is necessary to make a certification or accreditation decision.[181]

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179. *See generally* Linda Darling-Hammond et al., *Variation in Teacher Preparation*, *supra* note 172.

180. *See, e.g.*, LINDA DARLING HAMMOND, ET AL., A LICENSE TO TEACH, *supra* note 93; SUZANNE M. WILSON ET AL., CENTER FOR THE STUDY OF TEACHING AND POL'Y, TEACHER PREPARATION RESEARCH: CURRENT KNOWLEDGE, GAPS, AND RECOMMENDATIONS (2001).

181. Henry M. Levin, *Teacher Certification and the Economics of Information*, 2

C. *Evidence about Important Aspects of Teacher Knowledge and Skill*

Certification alone is a relatively crude measure of teaching quality. Although it incorporates a number of important indicators, it is a measure of minimal competence. As in other professions, licensure or certification does not, by itself, indicate the degree to which a practitioner will be successful in a given setting. There are undoubtedly some teachers who are licensed who are not highly effective, both because of variability in the quality of teacher education they received and variability in other traits not well-assessed by licensing procedures (e.g., level of energy, perseverance, enthusiasm, and fit with their teaching position). State licensing systems also vary in their quality – that is, the extent to which the mix of requirements they impose are strongly related to the ability to teach well and to set an appropriate minimal standard while not over-regulating the teacher labor market in ways that have unintended side-effects. There are also undoubtedly some unlicensed teachers who are effective – either because they are well-prepared to teach but have not completed all of the specific requirements associated with the certification process (many fully prepared out-of-state and some in-state entrants fall into this category), or because they are teaching familiar content to populations of students whose needs do not exceed their knowledge base about teaching and learning (many private school teachers whose students are preselected to be academically successful may fall into this category).

Despite the limitations of formal licensing systems, the evidence noted above suggests there is a strong tendency for teachers who have completed the requirements for certification and performed well on certification tests to be more effective than others. An important question is what kinds of specific training and abilities have been found to make a difference for teacher effectiveness?

Research on teaching suggests that general knowledge and ability, verbal ability, and subject matter knowledge provide important foundations for expertise; knowledge of teaching, learning, and children enables teachers to translate ideas into useful learning experiences; abilities to plan, organize, and implement complex tasks are additional factors predicting effec-

EDUC. EVALUATION & POL'Y ANALYSIS 7 (1980).

tiveness; and greater experience—at least during the first years of practice—enables teachers to apply knowledge increasingly appropriately in non-routine situations.[182] All of these factors appear to have a bearing on teacher effectiveness. However, it is difficult to measure precisely the relative contributions of each factor, as many of these variables are highly correlated, and different data sets include different measures. Furthermore, few data sets contain fine-grained measures of specific kinds of knowledge.

Measures of general academic and verbal ability have been most readily available in large data sets since the 1960s, and a number of studies have suggested that teachers' verbal ability is related to student achievement.[183] Among more recent studies, Ferguson and Helen Ladd conducted an analysis in Alabama similar to Ferguson's Texas study using a data set that included ACT scores instead of teacher licensing examination scores.[184] They found significant but somewhat smaller influences of these test scores, which are pre-college measures of general academic ability, as compared to the licensing examinations in Texas, and somewhat larger influences of master's degrees on student achievement than the Texas study found.[185] The findings were consistent for analyses conducted at both the district and school levels.

Some researchers have found a relationship between the selectivity of the college a teacher attended and their students' achievement.[186] College selectivity likely is another proxy for general academic or verbal ability. Some research has suggested that the effects of teachers' general academic or verbal ability on achievement may be differentially strong for teachers of differ-

182. *See generally* Darling-Hammond, *Teacher Quality*, *supra* note 29.

183. Samual Bowles & Henry M. Levin, *The Determinants of Scholastic Achievement—An Appraisal of Some Recent Evidence*, 3 J. HUM. RESOURCES 3 (1968); JAMES S. COLEMAN, ET AL., U.S. GOVERNMENT PRINTING OFFICE, EQUALITY OF EDUCATIONAL OPPORTUNITY 316, 317 (1966); Eric Hanushek, *Teacher Characteristics and Gains in Student Achievement: Estimation Using Micro Data*, 61 AM. ECON. REV. 280, 288 (1971); Eric A. Hanushek, *The Trade-off Between Child Quantity and Quality*, 100 J. OF POL. ECON. 84, 85 (1992).

184. Ronald F. Ferguson & Helen F. Ladd, *How and Why Money Matters: An Analysis of Alabama Schools*, *in* HOLDING SCHOOLS ACCOUNTABLE, PERFORMANCE-BASED REFORM IN EDUCATION 265, 273-74 (Helen F. Ladd ed., 1996).

185. *Id.*

186. *See* Ronald G. Ehrenberg & Dominic J. Brewer, *Do School and Teacher Characteristics Matter? Evidence from High School & Beyond*, 13 ECON. OF EDUC. REV. 1, 1-17 (1994).

ent types of students.[187] Some critics of teacher education have pointed to these studies as evidence that verbal ability is the most important predictor of teacher effectiveness.[188] However, the data sets used for these analyses did not have other measures of teacher knowledge and skill available. Economist Richard Murnane pointed out nearly twenty years ago that evidence about the influence of verbal ability was partly a function of the fact that standardized test scores were among the few teacher variables available in large-scale databases at that time, which did not include good measures of teacher education.[189] Murnane noted:

> Clearly one should not interpret these results as indicating that intellectual ability should be the sole criterion used in recruiting teachers or that formal teacher training cannot make a difference. In fact, the lack of evidence supporting formal preservice training as a source of competence may be to some extent a result of limitations in the available data. For example, all data bases suitable for examining the correlates of teaching effectiveness as measured by student achievement gains pertain to a single school district. Since there is less variation in training among teachers within a district than among teachers in the country at large, these data bases do not permit the most powerful possible tests of the efficacy of alternative teacher training programs.
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> . . .
>
> Thus, it would be incorrect to infer that these findings are evidence that other kinds of knowledge do not influence teaching effectiveness. As noted below, analyses of data sets that include measures of other kinds of teaching knowledge, including knowledge of content and pedagogy, find that such factors are significant contributors to teacher effectiveness. [190]

Measures of general education level (e.g., bachelor's or master's degree) appear to exert a small influence on teacher effectiveness. For example, in studies noted earlier in this article, a teacher's possession of a master's degree accounted for a small

187. *See, e.g.*, ANITA A. SUMMERS & BARBARA L. WOLFE, FED. RES. BANK OF PHILA., WHICH SCHOOL RESOURCES HELP LEARNING? EFFICIENCY AND EQUITY IN PHILADELPHIA PUBLIC SCHOOLS 14 (1975).

188. KATE WALSH, *supra* note 163.

189. Richard J. Murnane, *Understanding the Sources of Teaching Competence: Choices, Skills and the Limits of Training*, 84 TCHR. C. REC. 564, 564-69 (1983).

190. *Id.* at 565.

but noticeable portion of the measured variance in student achievement, while teacher certification status or certification test scores accounted for more.[191]

Across studies, the holding of a master's degree has been an inconsistent predictor of teacher effectiveness.[192] In general, master's degrees have been a crude proxy for teaching expertise, given the wide variability in the content of master's degrees pursued by teachers. Whereas some master's degree programs are directly related to teaching (e.g., degrees for reading specialists, special education teachers, five-year teacher education programs, and science education), most traditionally have been focused on jobs outside of teaching, such as administration, counseling, measurement, and evaluation. Goldhaber & Brewer found that there is a greater influence of teachers' education levels on student achievement when teachers have bachelor's and master's degrees in the content area taught (e.g., mathematics or mathematics education) as compared to unrelated degrees.[193] Thus, there is reason to expect that some master's degrees would affect teaching ability, but not much reason to expect the effect of master's degrees as a general variable to be large or uniform in the aggregate.

Policy contexts can influence what a specific degree measures. For example, some states have recently required master's degrees focused on teaching for teachers to secure a professional license, whereas most do not.[194] Betts and colleagues found that in California the proportion of a school's teachers with only a bachelor's degree (rather than a BA+30) influenced student achievement negatively, and the proportion of teachers who held master's degrees influenced achievement positively.[195] In California, most teacher credentials are secured in post-baccalaureate programs of thirty semester units.[196] Some of

191. *See* JULIAN R. BETTS ET AL., *supra* note 28, at 79-81; Ferguson, *supra* note 29; Ferguson & Ladd, *supra* note 184.

192. *See, e.g.*, Rob Greenwald et al., *The Effect of School Resources on Student Achievement*, 66 REV. EDUC. RES. 361, 378 (1996).

193. Goldhaber & Brewer, *When Should We Reward Degrees for Teachers?*, PHI DELTA KAPPAN, Oct. 1998, at 134-38; Goldhaber & Brewer, *supra* note 29, at 138.

194. Connecticut and New York, for example, now require teachers to earn a masters degree related to the area of the teaching certificate as the basis for the professional license.

195. BETTS ET AL., *supra* note 28.

196. *See GENERALLY* CALIFORNIA COMMISSION ON TECHER CREDENTIALING, ANNUAL REPORT ON CALIFORNIA TEACHER EDUCATION PROGRAMS ACADEMIC YEAR 2000-2001, *at* www.ctc.ca.gov/reports/TitleII_2000-2001_AnnualRpt.pdf (last vis-

these programs also award a master's degree.[197] Thus, in the context of California's requirements, these advanced degrees are more likely measuring preparation for teaching than would degree status elsewhere.

Teaching experience, especially in the early years, appears to influence teacher effectiveness.[198] Inexperienced teachers (those with less than two to three years of experience) are often found to be noticeably less effective than more senior teachers;[199] however, the benefits of experience appear to level off after about five to seven years.[200] As Murnane and Phillips point out, this leveling off may or may not be a function of the career trajectories of individual teachers.[201] Possible causes of this observed trend in cross-sectional data sets may be that differently able teachers may be recruited at different points in time as a result of labor market changes ("vintage" effects),[202] or more able teachers might leave the profession sooner ("selection" effects), thus leaving a less effective senior workforce.[203] Another possible cause of this curvilinear trend is that teachers do not always continue to grow and learn throughout their careers and may grow tired in their jobs.[204] Furthermore, the benefits of experience may interact with educational opportunities. Veteran teachers in settings that emphasize continual learning and collaboration appear to continue to improve their performance, but settings that promote ongoing learning for teachers are relatively rare.[205]

One other mediating variable for the effects of experience may be the quality of early preparation and the extent to which it provides extensive practice teaching. Some recent studies of

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197. *See id.*

198. *See* BETTS ET AL., *supra* note 28; Ferguson, *supra* note 29; Richard J. Murnane & Barbara R. Phillips, *Learning by Doing, Vintage, and Selection, Three Pieces of the Puzzle Relating Teaching Experience and Teaching Performance*, 1 ECON. OF EDUC. REV. 453, 454 (1981).

199. *See, e.g.*, Hanushek et al., *supra* note 133; John F. Kain & Kraig Singleton, *Equality of Educational Opportunity Revisited*, NEW ENG. ECON. REV., May/June 1996, at 101.

200. *See, e.g.* Murnane & Phillips, *supra* note 198. *See generally* SUSAN J. ROSENHOLTZ, TEACHERS' WORKPLACE: THE SOCIAL ORGANIZATION OF SCHOOLS (Research on Teaching Monograph Series ed., 1989).

201. Murnane & Phillips, *supra* note 198, at 461.

202. *Id.* at 455.

203. *Id.* at 456.

204. *Id.*

205. *See generally* Rosenholtz, *supra* note 200.

five-year teacher education programs—programs that include a bachelor's degree in the discipline and master's degree in education as well as a year-long student teaching placement—have found graduates to be more confident than graduates of four-year programs, more likely to stay in teaching,[206] and as effective as more senior teachers.[207] Similarly, a recent study found that graduates of the California State University who had had student teaching felt they were better prepared than those who had had an internship or who had taught on an emergency credential without student teaching.[208]

Teachers' subject matter knowledge and knowledge of teaching and learning appear to influence teacher effectiveness to varying degrees. A number of studies suggest that these two kinds of knowledge appear to be important both independently and in combination.[209] In separate reviews of research, Ashton and Crocker and Evertson, Hawley, and Zlotnik reported positive effects of subject matter background and teachers' formal education training on supervisory ratings and student learning in many of the studies they reviewed.[210]

Byrne summarized the results of thirty studies examining the relationship between student achievement and teachers' subject matter knowledge, as measured either by a subject knowledge test (standardized or researcher-constructed) or number of college courses taken within the subject area.[211] Among these studies, seventeen showed a positive relationship between sub-

206. Michael Andrew & Richard L. Schwab, *Has Reform in Teacher Education Influenced Teacher Performance? An Outcome Assessment of Graduates of Eleven Teacher Education Programs*, 17 ACTION IN TCHR. EDUC. 51 (1995).

207. JOHN J. DENTON & W.H. PETERS, TEXAS A&M UNIVERSITY, PROGRAM ASSESSMENT REPORT CURRICULUM EVALUATION OF A NON-TRADITIONAL PROGRAM FOR CERTIFYING TEACHERS (1988).

208. *See* OFFICE OF THE CHANCELLOR, CALIFORNIA STATE UNIVERSITY, FIRST SYSTEMWIDE EVALUATION OF TEACHER EDUCATION PROGRAMS IN THE CALIFORNIA STATE UNIVERSITY: SUMMARY REPORT (2002); OFFICE OF THE CHANCELLOR, CALIFORNIA STATE UNIVERSITY, PREPARING TEACHERS FOR READING INSTRUCTION (K-12): AN EVALUATION BRIEF BY THE CALIFORNIA STATE UNIVERSITY (2002).

209. *See* Patricia Ashton & Linda Crocker, *Does Teacher Certification Make a Difference?*, 3 FLA. J. OF TCHR. EDUC. 73-83 (1986); Patricia Ashton & Linda Crocker, *Systematic Study of Planned Variations: The Essential Focus of Teacher Education Reform*, 38 J. OF TCHR. Educ. 2-8 (1987); *see also* Carol M. Evertson et al., *Making a Difference in Educational Quality Through Teacher Education*, 36 J. OF TCHR. EDUC. 2-12 (1985).

210. *Id.*

211. C.J. Byrne, Teacher Knowledge and Teacher Effectiveness: A Literature Review, Theoretical Analysis and Discussion of Research Strategy (1983) (paper presented at the meeting of the Northwestern Educational Research Association).

ject matter knowledge and student achievement.[212] Byrne noted that many of the "no relationship" studies had so little variability in the teacher knowledge measure that insignificant findings were almost inevitable.[213] In addition, Byrne suggests that the positive effect of subject matter knowledge is likely mediated by knowledge of how to teach the subject to various kinds of students:

> It is surely plausible to suggest that insofar as a teacher's knowledge provides the basis for his or her effectiveness, the most relevant knowledge will be that which concerns the particular topic being taught and the relevant pedagogical strategies for teaching it to the particular types of pupils to whom it will be taught. If the teacher is to teach fractions, then it is knowledge of fractions and perhaps of closely associated topics which is of major importance... Similarly, knowledge of teaching strategies relevant to teaching fractions will be important.[214]

Both the importance of subject matter knowledge and the additional influence of teaching knowledge and skill are suggested in other research.[215] Based on data for 2,829 students from the Longitudinal Study of American Youth (LSAY), Monk found that teachers' content preparation, as measured by coursework in the subject field, was usually positively related to student achievement in mathematics and science.[216] In mathematics, teachers' subject matter courses showed diminishing returns as an influence on student achievement above a threshold level (e.g., five courses).[217] In addition, teacher education coursework (e.g., mathematics or science methods courses) had a positive effect on student learning at each grade level in both fields and, in mathematics, these courses sometimes had "more powerful effects than additional preparation in the content area."[218] Monk concluded that, "a good grasp of one's subject area is a necessary but not a sufficient condition for effective teaching."[219]

Monk's findings appear to suggest that subject matter

212. *Id.*
213. *Id.*
214. *Id.* at 14.
215. *See* Monk, *supra* note 29, at 142-43.
216. *Id.*
217. *Id.*
218. *Id.* at 142.
219. *Id.*

knowledge influences teacher effectiveness up to some level of competence in the subject but may be less important thereafter.[220] Begle and Geeslin also found in their review of research on mathematics teaching that the absolute number of course credits in mathematics is related to teacher performance but not linearly so.[221] It makes sense that knowledge of the material to be taught is essential to good teaching, but also that returns to subject matter expertise might grow smaller beyond some essential level that exceeds the demands of the curriculum being taught. Like Monk, Begle found in his review of findings of the National Longitudinal Study of Mathematical Abilities that the number of credits a teacher had in mathematics methods courses was an even stronger correlate of student performance than was the number of credits in mathematics courses.[222]

The strength of the relationship between subject matter knowledge and student performance also may depend on the level of the content being taught. In a multilevel analysis of the LSAY, Monk and King found small influences of teacher content background on student performance in science and mathematics.[223] They found some evidence of cumulative effects of prior as well as proximate teachers' subject matter preparation on student performance in mathematics.[224] The effects of teachers' subject matter background differed for high- and low-achieving students as well as for different grade levels.[225]

Similarly, in a review of sixty-five studies of science teachers' characteristics and behaviors, Druva and Anderson found students' science achievement was positively related to the teachers' background in both science coursework and education,[226] with the amount of science coursework showing a

220. *See id.*

221. EDWARD G. BEGLE & WILLIAM E. GEESLIN, NLSMA REPORTS NO. 28, TEACHER EFFECTIVENESS IN MATHEMATICS INSTRUCTION 143 (James W. Wilson & Edward G. Begle eds., 1972).

222. *Id.*

223. David H. Monk & Jennifer A. King, *Multilevel Teacher Resource Effects in Pupil Performance in Secondary Mathematics and Science: The Case of Teacher Subject Matter Preparation, in* CHOICES AND CONSEQUENCES: CONTEMPORARY POLICY ISSUES IN EDUCATION 29, 42-43. (R.G. Ehrenberg ed., 1994).

224. *Id.* at 42-43, 46, 49-52.

225. *See generally id.*

226. Education background was measured as a composite variable consisting of overall GPA and grades in education courses, performance in student teaching, and experience. In a separate analysis, the amount of education coursework was significantly related to ratings of teacher effectiveness. C.A. Druva & Richard D.

stronger relationship to student achievement, especially in higher-level science courses, and the amount of education coursework showing a significant correlation with ratings of teacher effectiveness.[227] Hawk, Coble, and Swanson also found that the effects of having a fully-certified teacher in mathematics—one with strong background in the content as well as knowledge of teaching methods in the subject—were greater for algebra courses than for general mathematics courses.[228] Mandeville & Liu found that teachers' specialized training in mathematics was a more important predictor of seventh grade students' math performance on high-level mathematics problems than on low-level problems.[229]

One important issue surfaced by some of these studies is the problem of misassignment of teachers—that is, the assignment of teachers to content fields they were not prepared to teach. The degree of misassignment of teachers has been quite large in a number of states, including California, for more than a decade.[230] At least two studies have found that, at least for mathematics learning, student achievement is significantly enhanced when teachers are certified in the content field they teach.[231] In both of these data sets, some of the teachers who were not fully certified in mathematics were likely to have been certified as generalists or in another field.[232] The combination of content and content pedagogical training represented by field-specific certification seems to have made a difference in teachers' effectiveness.[233] In addition, Darling-Hammond found that the most significant predictor of state-level average student achievement in mathematics and reading was the overall proportion of teach-

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Anderson, *Science Teacher Characteristics by Teacher Behavior and by Student Outcome: A Meta-analysis of Research*, 20 J. OF RESEARCH IN SCI. TEACHING 467-79 (1983).

227. *See id.*

228. Hawk et al., *supra* note 132, at 15.

229. Garrett K. Mandeville & Qiduan Liu, *The Effect of Teacher Certification and Task Level on Mathematics Achievement*, 13 TEACHING AND TCHR. EDUC. 397-407 (1997).

230. *See* LINDA DARLING-HAMMOND ET AL., NAT'L COMM'N ON TEACHING AND AMERICA'S FUTURE, DOING WHAT MATTERS MOST: INVESTING IN QUALITY TEACHING (1997); RICHARD M. INGERSOLL, CENTER FOR THE STUDY OF TEACHING & POL'Y, OUT-OF-FIELD TEACHING, EDUCATIONAL INEQUALITY, AND THE ORGANIZATION OF SCHOOLS: AN EXPLORATORY ANALYSIS (2002), *available at* http://www.ctpweb.org (last visited Apr. 10, 2003).

231. *See* Goldhaber & Brewer, *Does Teacher Certification Matter*, *supra* note 29, at 129; *see also* Hawk et al., *supra* note 132, at 13-15.

232. *See id.*

233. *Id.*

ers holding both a major and full certification in the field they taught.[234]The influences of this variable were stronger than the influence of certification alone.[235]

Two other studies of students from large colleges of education have found positive influences of both teachers' subject matter background and education coursework on teacher performance as measured by systematic ratings by trained observers.[236] In each of these studies, ratings of classroom performance on a number of dimensions of teaching were significantly correlated with education training; correlations between performance ratings and measures of subject matter knowledge were positive but smaller.[237] Since it is likely that all or most of the teachers being evaluated in these studies were teaching in their fields of preparation, the effects of differential subject matter knowledge are likely to be less visible than they would be in a study that included out-of-field teachers.

Finally, student achievement appears to be especially influenced by the use of specific teaching practices, which also appear related to teachers' knowledge of content and teaching methods. There are a number of studies related to the use of particular practices that have been associated with student

234. Linda Darling-Hammond, *Teacher Quality, supra* note 29.

235. *Id.*

236. *See* Patrick Ferguson & Sid T. Womack, *The Impact of Subject Matter and Education Coursework on Teaching Performance*, 44 J. OF TCHR. EDUC. 55 (1993); Edith Guyton & Elizabeth Farokhi, *Relationships Among Academic Performance, Basic Skills, Subject Matter Knowledge, and Teaching Skills of Teacher Education Graduates*, 38 J. OF TCHR. EDUC. 37 (1987).

237. Ferguson and Womack examined correlations between thirteen dimensions of teaching performance rated by trained observers and education coursework, NTE subject matter test scores, and GPA in the student's major in a single large teacher education program. They found that the amount of education coursework completed by teachers explained about 16% of the variance in performance ratings; measures of content knowledge (NTE scores and GPA in the major) explained just under 4%. *See* Ferguson & Womack, *supra* note 236, at 60. In a similar study of another large program, Guyton and Farokhi found significant, positive relationships between teacher education coursework performance (upper division GPA, completed substantially in the education program) and teacher performance on fourteen dimensions of teaching as measured through a standardized observation instrument (the Georgia Teacher Performance Assessment Instrument) (overall $r=.34$, $p<.01$). Relationships between classroom performance and subject matter test scores (the Georgia Teacher Competency Tests) were positive but less often significant (overall $r=.07$) and relationships between classroom performance and basic skill scores (the Georgia Regents Test) were close to zero. In this study, candidates' sophomore and upper level GPAs (reflecting subject matter courses as well as education courses) were more strongly correlated with teaching performance than subject matter test scores. *See* Guyton & Farokhi, *supra* note 236, at 40.

achievement on various measures and related to successful teacher training for these practices.[238] For example, in the 1970s and 1980s, a number of studies of teacher behaviors found that students learn measurably more from teachers who engage in "active teaching" based on a "mastery" orientation.[239] Active teaching is generally described as a form of practice in which teachers actively demonstrate skills, explain concepts and assignments, and support guided practice and the use of skills in context. Teachers also spend more time on academic tasks, focus on key ideas, and develop applications for using skills in context; manage the classroom to create strong social relationships and foster productive work time, use pacing that allows continuous progress; and re-teach as needed, using alternative strategies and encouraging revision to mastery.[240]

Studies using experimental or matched comparison group designs have found that teachers can successfully be taught to use teaching strategies that positively influence their students' learning.[241] For example, Needels and Gage report on reviews of sixteen experimental studies of the outcomes of teacher training on teachers' practices and student outcomes, finding that "[t]he teacher education programs brought about substantial increases - in fifteen of the sixteen experimental groups - in the use of the recommended teaching practice."[242] The median effect size for achievement gains in the thirteen studies for which effects sizes could be calculated was 0.52.[243] Johnson & Johnson have reviewed a large body of experimental research, much of it examining the teaching practices and student outcomes resulting from specific teacher training on cooperative learning methods,

238. *See, e.g.*, THOMAS L. GOOD & JERE E. BROPHY, EDUCATIONAL PSYCHOLOGY: A REALISTIC APPROACH (2d ed. 1986); Jere Brophy & Thomas L. Good, *Teacher Behavior and Student Achievement*, *in* HANDBOOK OF RESEARCH ON TEACHING: A PROJECT OF THE AMERICAN EDUCATION RESEARCH ASSOCIATION 328-75 (Merlin C. Wittrock ed., 3rd. ed. 1986); *see also* GOOD & BROPHY, *supra* note 92; Anne Reynolds, Educational Testing Service, *What Is Competent Beginning Teaching? A Review of the Literature*, 62 REV. OF EDUC. RESEARCH 1 (1992); *see generally* EFFECTIVE TEACHING: CURRENT RESEARCH (Hersholt C. Waxman & Herbert J. Walberg eds., 1991).

239. *See* GOOD & BROPHY, *supra* note 238, at 238-39.

240. *See* GOOD & BROPHY, *supra* note 92, at 270.

241. *See, e.g.*, Margaret C. Needels & N.L. Gage, *Essence and Accident in Process-Product Research on Teaching*, *in* EFFECTIVE TEACHING: CURRENT RESEARCH, 3-32 (Hersholt C. Waxman & Herbert J. Walberg eds., 1991).

242. *Id.* at 17.

243. *Id.* at 18. *See also* N.L. Gage & Margaret C. Needels, *Process-Product Research on Teaching: A Review of Criticisms*, 89 ELEMENTARY SCH. J. 253 (1989).

showing large and consistent effects of the use of cooperative learning on student effort, achievement, and productivity.[244]

Other evidence shows that teachers who have experienced targeted professional development focused on effective teaching practices produce student achievement gains that are significantly greater than those of comparison or control group teachers.[245] However, not all training is based on well-grounded conceptions of either student learning or teacher learning. The content as well as the form of professional development appears to influence its effectiveness.[246] In addition, certain kinds of teaching practices (and associated professional development) appear to be more effective in bringing about basic skills learning, while other approaches to teaching and teacher development appear to be more effective in supporting more complex learning of higher order skills.[247]

Cognitive science research has produced evidence about an

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244. In reviewing more than 300 experimental and correlational research studies conducted over ninety years, for example, Johnson & Johnson report an overall effect size of 0.66 when cooperative and individualistic classroom efforts are compared; among methodologically high-quality studies, the effect size was 0.88. *See* David W. Johnson & Roger T. Johnson, *Classroom Instruction and Cooperative Learning, in* EFFECTIVE TEACHING: CURRENT RESEARCH 283. *See generally* Robert J. Stevens & Robert E. Slavin, *The Cooperative Elementary School: Effects on Students' Achievement, Attitudes, and Social Relations*, 32 AM. EDUC. RES. J. 321-51 (1995).

245. *See, e.g.*, Joshua D. Angrist & Victor Lavy, NAT'L BUREAU OF ECON. RESEARCH, DOES TEACHER TRAINING AFFECT PUPIL LEARNING? EVIDENCE FROM MATCHED COMPARISON IN JERUSALEM PUBLIC SCHOOLS (1998); J. CRAWFORD, ET AL., PROGRAM ON TEACHING EFFECTIVENESS, CENTER FOR EDUCATIONAL RESEARCH AT STANFORD, AN EXPERIMENT ON TEACHER EFFECTIVENESS AND PARENT-ASSISTED INSTRUCTION IN THE THIRD GRADE (1978); Howard Ebmeier & Thomas L. Good, *The Effects of Instructing Teachers About Good Teaching on the Mathematics Achievement of Fourth Grade Students*, 16 AM. EDUC. RES. J. 1-16 (1979); Thomas L. Good & D.A. Grouws, *The Missouri Mathematics Effectiveness Project: An Experimental in Fourth-Grade Classrooms*, 71 J. OF EXPERIMENTAL PSYCH. 355-362 (1979); *see generally* Frances Lawrenz & Heather McCreath, *Integrating Quantitative and Qualitative Evaluation Methods to Compare Two Teacher Inservice Training Programs*, 5 J. OF RESEARCH IN SCI. TEACHING 397-407 (1988); *see generally* DeWayne A. Mason & Thomas L. Good, *Effects of Two-Group and Whole-Class Teaching on Regrouped Elementary Students Mathematics Achievement*, 30 AM. RESEARCH J. 328-60 (1993).

246. MARY KENNEDY, FORM AND SUBSTANCE IN INSERVICE TEACHER EDUCATION (1998).

247. Jere E. Brophy & Thomas L. Good, *Teacher Behavior and Student Achievement, in* AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, HANDBOOK OF RESEARCH ON TEACHING, 328-75 (Merlin C. Wittrock ed., 3d ed., 1986); *see generally* J. CRAWFORD & JANE STALLINGS, PROGRAM ON TEACHING EFFECTIVENESS, CENTER FOR EDUCATIONAL RESEARCH AT STANFORD, EXPERIMENTAL EFFECTS OF IN-SERVICE TEACHER TRAINING DERIVED FROM PROCESS-PRODUCT CORRELATIONS IN THE PRIMARY GRADES (1978).

expanded repertoire of teaching strategies that appear to foster higher order thinking and performance.[248] Cognitive scientists have found, for example, that students better acquire complex skills when their teachers focus on developing conceptual understanding; help students recognize patterns and develop self-monitoring strategies; and model thinking, scaffold the learning process, and provide coaching while students use their knowledge in a variety of applications.[249] In addition, students learn more when their teachers help them develop the ability to evaluate and regulate their own learning. For example, students learn more when teachers allow them to talk about their understanding and help them evaluate different solutions; when teachers help students see patterns and connections for transferring their knowledge; and when teachers gradually enable students to take on more independence in their learning.[250] Teachers who have learned to use these approaches have produced increased student learning of higher order skills and greater conceptual understanding in the areas of reading,[251] writing,[252] mathematics problem solving,[253] and science.[254]

In addition to specific types of teacher training, some re-

248. *See generally* Linda M. Anderson, *Classroom Instruction*, *in* KNOWLEDGE BASE FOR THE BEGINNING TEACHER 101-15 (Maynard C. Reynolds ed., 1989); *see generally.* GOOD & BROPHY, *supra* note 92.

249. *Id.* at 26-78.

250. *Id.* at 178-202.

251. *See generally* Gerald G. Duffy et al., Effects of Explaining the Reasoning Associated with Using Reading Strategies, 22 READING RES. Q. 347 (1987); Annemarie Sullivan Palincsar & Ann L. Brown, *Reciprocal Teaching of Comprehension-Fostering and Comprehension-Monitoring Activities*, 1 COGNITION & INSTRUCTION 117 (1984); Annemarie Sullivan Palincsar & Ann L. Brown, *Classroom Dialogues to Promote Self-Regulated Comprehension*, 1 ADVANCES IN RESEARCH ON TEACHING 35 (1989).

252. *See generally* Carol Sue Englert & Taffy Raphael, *Developing Successful Writers through Cognitive Strategy Instruction*, 1 ADVANCES IN RESEARCH ON TEACHING 105 (Jere E. Brophy ed., 1989). *See generally* Carol Sue Englert et al., *Socially Mediated Instruction: Improving Students' Knowledge & Talk About Writing*, 92 ELEMENTARY SCH. J. 411 (1992).

253. *See* Thomas P. Carpenter et al., *Using Knowledge of Children's Mathematics Thinking in Classroom Teaching: An Experimental Study*, 26 AM. EDUC. RES. J. 499 (1989); Elizabeth Fennema et. al., *Learning Mathematics with Understanding*, 1 ADVANCES IN RESEARCH ON TEACHING 195 (J. Brophy ed., 1989); Terry Wood & Patricia Sellers, *Assessment of a Problem-Centered Mathematics Program: Third Grade*, 27 J. FOR RES. IN MATHEMATICS EDUC. 337 (1996).

254. *See* P.B. Otto & R.F. Schuck, *The Effect of a Teacher Questioning Strategy Training Program on Teaching Behavior, Student Achievement, and Retention*, 20 J. OF RESEARCH IN SCI. TEACHING 521 (1983); Rochelle L. Rubin & John T. Norman, *Systematic Modeling Versus the Learning Cycle: Comparative Effects on Integrated Science Process Skill Achievement*, 29 J. RESEARCH IN SCI. TEACHING 715, 715-27 (1992).

search has examined links between the amount of teacher education, teachers' use of practices that support complex learning, and student achievement.[255] For example, in an analysis of science teaching, Perkes found that teachers with greater training in science teaching were more likely to use laboratory techniques and discussions and to emphasize conceptual applications of ideas, while those with less education training placed more emphasis on memorization.[256] Teachers' coursework in science education was significantly related to students' achievement on tasks requiring problem solving and applications of science knowledge.[257]

Some research has suggested that teacher education influences the use of practices that respond to diverse students' needs and that encourage higher order learning.[258] Doyle hypothesizes that since the novel tasks required for problem-solving are more difficult to manage than the routine tasks associated with rote learning, lack of knowledge about how to manage an active, inquiry-oriented classroom can lead teachers to turn to passive tactics, like the completion of workbooks, that "dumb down" the curriculum, rather than complex tasks that require more skill to orchestrate.[259]

In a set of studies of two groups of secondary student teachers with different amounts of education preparation within the same institution, the group with more extensive education preparation (more field experiences and more extensive education coursework) produced stronger student achievement gains on pre- and post-tests of learning within curriculum units designed by the student teachers.[260] Greater student gains were

255. *See* V.A. Perkes, *Junior High School Science Teacher Preparation, Teaching Behavior, and Student Achievement*, 6 J. OF RESEARCH IN SCI. TEACHING 121 (1967-1968).

256. *Id.* at 123-24.

257. *Id.* at 123-24.

258. *See, e.g.*, J.B. Hansen, The Relationship of Skills and Classroom Climate of Trained and Untrained Teachers of Gifted Students (1998) (unpublished doctoral dissertation, Purdue University); Charles E. Skipper & Richard Quantz, *Changes in Educational Attitudes of Education and Arts and Science Students During Four Years of College*, 38 J. OF TCHR. EDUC. 39, 42 (1987).

259. Walter Doyle, *Content Representation in Teachers' Definitions of Academic Work*, 18 J. OF CURRICULUM STUDS. 365-379 (1986). *See also* Kathy Carter & Walter Doyle, Teachers' Knowledge Structures and Comprehension Processes, *in* EXPLORING TCHRS' THINKING 147 (James Calderhead ed., 1987).

260. *See* John J. Denton & L.J. Lacina, *Quantity of Professional Education Coursework Linked with Process Measures of Student Teaching*, TCHR. EDUC. AND PRAC. 39-64 (1984). *See also* John J. Denton & S. Norris, *Learner Cognitive Attainment: A Basis for Establishing a Student Teacher's Competence*, 8 TEX. TECH J. OF EDUC. 45-57 (1981); John

also associated with stronger supervisory ratings of the student teachers on measures of instructional planning and instructional skills and with practices that created more time for student learning.[261]

Recently, the collection of data about teacher practices in large-scale data sets has allowed correlational analyses of teachers' practices and student achievement that control for student and teacher characteristics. For example, using data from the National Assessment of Educational Progress, Wenglinsky examined the relationships between teachers' training, teaching practices, and student achievement, controlling for student characteristics and other school inputs.[262] He found that eighth grade students score higher on the NAEP mathematics assessments when they have had teachers with a major or minor in mathematics or mathematics education, teachers with more professional training in how to work with diverse student populations (a combined measure of training in cultural diversity, teaching limited English proficient students, and teaching students with special needs), and teachers with more training in developing higher-order thinking skills.[263] Students also scored higher when they had teachers who engage in more hands-on learning (work with real-world problems and use of manipulatives) emphasizing higher-order thinking.[264] Similarly, students whose teachers have majored in science or science education and who have had more training in how to develop laboratory skills and who engage in more hands-on learning perform better on the NAEP science assessments.[265]

In his path analysis, Weglinsky concluded that teachers' preparation in content and specific methods appears to be associated with teaching practices, which in turn influence achievement.[266] Like the Ferguson study and the later Ferguson and

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J. Denton & J. Tooke, *Examining Learner Cognitive Attainment as a Basis for Assessing Student Teachers*, 3 ACTION IN TCHR. EDUC. 39-45 (1981-82); JOHN J. DENTON & N.L. SMITH, NORTHWEST REGIONAL EDUCATIONAL LAB, RESEARCH ON EVALUATION PROGRAM ALTERNATIVE TEACHER PREPARATION PROGRAMS: A COST-EFFECTIVENESS COMPARISON 237, 569 (1983).

261. *Id.*

262. Harold Wenglinsky, *How Schools Matter: The Link between Teacher Classroom Practices and Student Academic Performance*, 10 EDUC. POL'Y ANALYSIS ARCHIVES 12 (Feb. 13, 2002), *at* http://epaa.asu.edu/epaa/v10n12/ (last visited Apr. 10, 2003).

263. *Id.*

264. *Id.*

265. *Id.*

266. *Id.*

Ladd study, Wenglinsky found that the combined effects of teaching variables can outweigh the effects of socioeconomic status (SES) on student achievement:

> The sum of the effects from the three aspects of teacher quality [teacher major, professional development, and practices] is .98. The effect sizes for SES range from .74 to .83, with a value of .76 in the model where all three aspects of teacher quality are included . . . Thus, the impact of teaching can be said not only to be comparable to that of SES, but even to be somewhat greater.[267]

There is substantial consensus that teachers' specific practices, which are informed by their preparation, make a difference, especially for the teaching of such key basic skills as reading.[268] The National Reading Panel of the National Institute of Child Health and Human Development recently published a major review of carefully controlled research which concluded that a set of identifiable teaching practices are strongly associated with improvements in children's reading achievement.[269] These include the systematic teaching of phonemic awareness, guided repeated oral reading, direct and indirect vocabulary instruction with careful attention to readers' needs, and a combination of reading comprehension techniques that include metacognitive strategies.[270]

The report notes that teacher education is critical to the success of reading instruction with respect to both instruction in phonemic awareness and more complex comprehension skills:

> Knowing that all phonics programs are not the same brings with it the implication that teachers must themselves be educated about how to evaluate different programs to determine which ones are based on strong evidence and how they can most effectively use these programs in their own classrooms. It is therefore important that teachers be provided with evidence-based pre-service training and ongoing inservice training to select (or develop) and implement the most appropriate phonics instruction effectively.[271]

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267. *Id. See also* Ferguson, *supra* note 29, at 465; Ferguson & Ladd, *supra* note 184, at 265.

268. *See* NATIONAL READING PANEL, TEACHING CHILDREN TO READ: AN EVIDENCE-BASED ASSESSMENT OF THE SCIENTIFIC RESEARCH LITERATURE ON READING AND ITS IMPLICATIONS FOR READING INSTRUCTION (2000).

269. *Id.*

270. *Id.* at 7-16.

271. *Id.* at 11.

> Teaching reading comprehension strategies to students at all grade levels is complex. Teachers not only must have a firm grasp of the content presented in the text, but also must have substantial knowledge of the strategies themselves, of which strategies are most effective for different students and types of content and of how best to teach and model strategy use. . . . [Data from the studies reviewed on teacher training] indicated clearly that in order for teachers to use strategies effectively, extensive formal instruction in reading comprehension is necessary, preferably beginning as early as preservice.[272]

Studies have found that teachers can learn strategies that enable them to teach these complex comprehension skills and that specific teaching practices acquired through professional training enable teachers to improve student reading outcomes.[273]

The National Assessment of Educational Progress studies of achievement have examined how specific kinds of teacher learning opportunities are related to their students' reading achievement.[274] In both 1992 and 1994, fourth grade students of teachers who were fully certified, who had certification in reading, who had master's degrees, and who had had professional coursework in literature-based instruction scored better on average on the NAEP reading assessments than students whose teachers lacked general certification or certification in reading, master's degrees, or this particular kind of professional development.[275] While these relationships were generally modest, the relationships between specific teaching practices and student achievement were larger, and use of these practices was in turn correlated with teachers' preparation. Teachers who had more professional training were more likely to use teaching practices that are associated with higher reading achievement—use of trade books and literature, integration of reading and writing strategies, assessment of reading through writing—and were less likely to engage in practices, such as extensive use of read-

272. *Id.* at 15-16.

273. *See, e.g.*, Duffy et al., *supra* note 251, at 347-68; *see generally* Gerald G. Duffy & Laura R. Roehler, *The Tension Between Information Giving and Mediation: Perspectives on Instructional Explanation and Teacher Change*, 1 ADVANCES IN RESEARCH ON TEACHING 1 (Jere Brophy ed., 1989) (regarding explicit strategy instruction); *see also* Palincsar & Brown, *supra* note 251, at 35-72 (regarding reciprocal teaching).

274. *See* NATIONAL CENTER FOR EDUCATION STATISTICS, DATA COMPENDIUM, *supra* note 268; NATIONAL CENTER FOR EDUCATION STATISTICS, DATA ALMANAC, *supra* note 268.

275. *Id.*

ing kits and workbooks, found to be associated with lower levels of student achievement.[276] Although these correlations are bivariate and cannot be interpreted as causal, the findings are similar to those found in Wenglinsky's multivariate study of teacher training, teaching practices, and student achievement on the NAEP mathematics and science tests.[277]

The aspects of teachers' qualifications that appear to influence student learning include their verbal and general academic ability, level of experience in the early years of their careers, knowledge of subject matter and of teaching and learning, and the specific practices in which they engage. All of these are incorporated into California's teacher credentialing system, which requires fully certified teachers to provide demonstrations of basic skills, subject matter knowledge, knowledge about teaching and learning (including the teaching of reading), and supervised experience in student teaching and induction programs. This set of knowledge and skills is measured against standards (the California Standards for the Teaching Profession) that are based on evidence of practices research has found to be effective. As shown above, evidence suggests that access to fully prepared and certified teachers in California and elsewhere is associated with greater student achievement. However, this access is far from universally available, and in California, it appears to be strongly correlated with students' race, ethnicity, language background, and socioeconomic status.

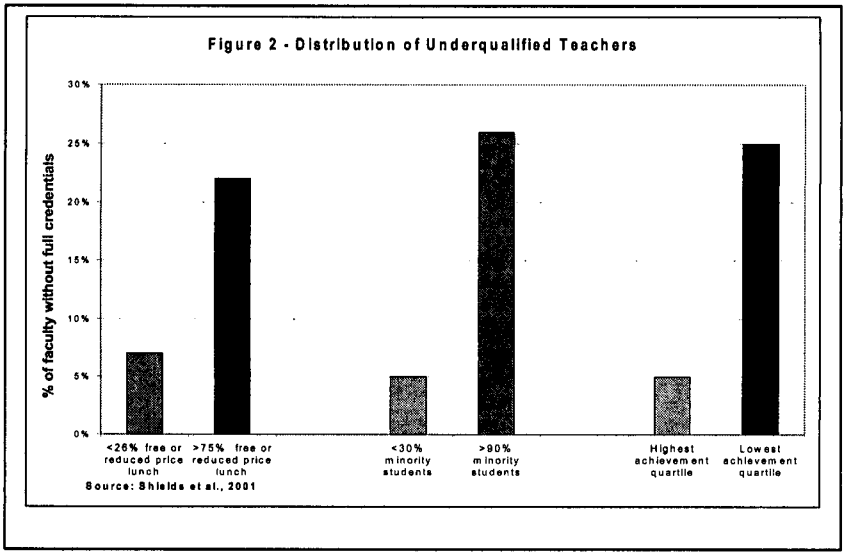
V. ACCESS TO QUALITY TEACHING IN CALIFORNIA

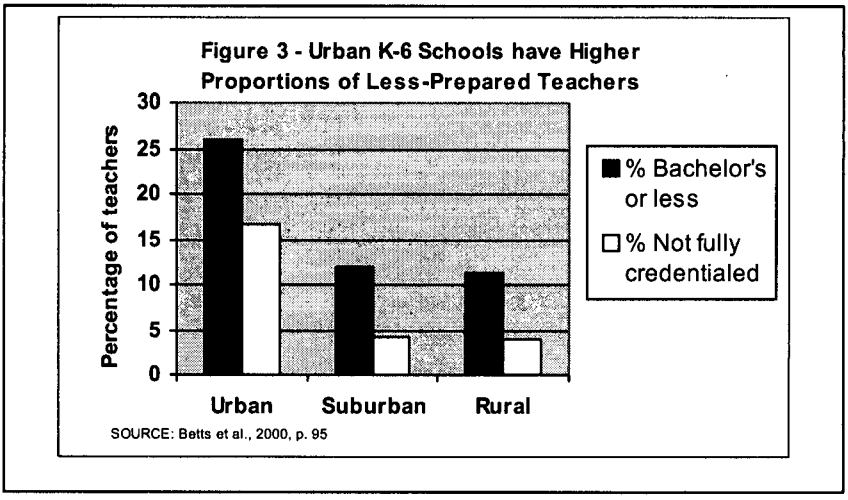
While there is substantial evidence that well-qualified teachers who use effective practices are an important component of educational opportunity, there is great inequality in access to this critical resource. Studies by Stanford Research International (SRI), the Public Policy Institute, PACE, and the RAND Corporation, among others, have all documented the large and growing and disparities in California children's opportunities to learn, especially their access to well-qualified teachers.

In a series of studies over the last several years, SRI has documented large and growing disparities in the access California school children have to qualified teachers.[278] As Figure 2 il-

276. *Id.*
277. *Id. See also* Wenglinsky, *supra* note 262.
278. PATRICK M. SHIELDS ET AL., THE CENTER FOR THE FUTURE OF TEACHING AND

lustrates, schools serving the greatest proportions of low-income and minority students are four to five times more likely to hire teachers without full certification.[279] Unqualified teachers are also concentrated in the lowest-achieving schools.[280]





LEARNING, THE STATUS OF THE TEACHING PROFESSION: RESEARCH FINDINGS AND POLICY RECOMMENDATIONS (1999);. SHIELDS ET AL., *supra* note 5; SHIELDS ET AL., *supra* note 23.

279. *See supra* note 274 and accompanying text.

280. *See supra* note 275 and accompanying text.

Many California districts do not experience great difficulty hiring qualified teachers. In 2000-01, about 47% of California's school districts (and 41% of schools) had fewer than 5% uncredentialed teachers.[281] About one-fourth hired no unqualified teachers at all.[282] However, in nearly a quarter (24%) of the schools in the state, more than 20% of the teachers are underqualified (that is, they lack a preliminary or professional clear credential).[283] These are disproportionately schools in high-poverty communities serving large proportions of students of color and English language learners, mostly in urban areas.[284] The presence of underqualified teachers is strongly related both to student socioeconomic status and to student achievement.[285]

Table 1
Training of Emergency Permit and Other Teachers, 2000
Mean (Standard Deviation)
(Unweighted n=786)

Amount of Coursework	Preliminary, Clear, or Intern Credential	Emergency Permit or Waiver
# elementary education courses (exclusive of other courses listed below)	7.40 (10.03)*	3.99 (4.60)
# reading methods courses	3.60 (4.10)**	1.89 (1.25)
# mathematics education courses	2.66 (2.77)**	1.66 (1.10)
# special education courses	1.68 (3.73)*	0.84 (0.70)
# ELL / LEP courses	2.68 (3.77)	2.05 (1.79)

ANOVA conducted with weighted sample estimates, unweighted F-tests of significance, *p < .05; **p<.01

Table 2
Characteristics of Emergency Permit Teachers, by School Type, 2000

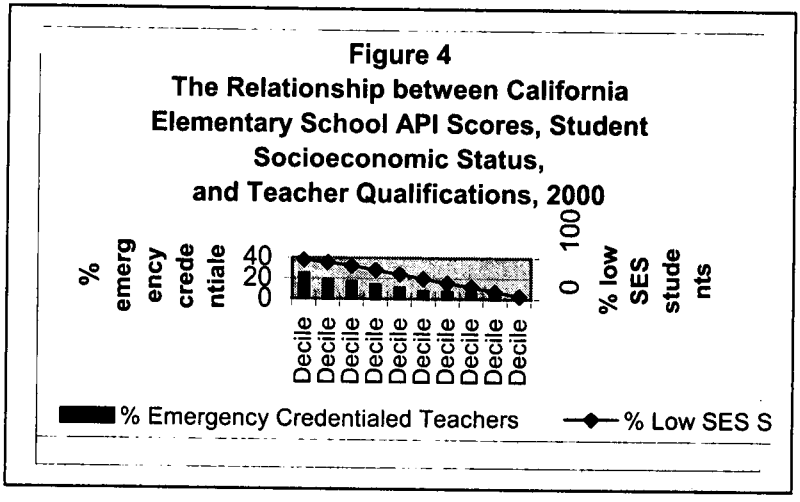
	Total Sample	<30% minority	>90% minority
Total years teaching - mean (standard deviation)	5.43 (4.87)	9.96** (6.50)	3.55 (1.43)
% with 0-3 years*	43.7%	8.4%	54.3%
% with 4-5 years*	26.2%	19.9%	38.8%
% with 6 years or more*	30.1%	72.0%	6.9%
# of elementary education courses - mean (standard deviation)	3.87 (3.84)	6.16 (3.59)	2.48 (3.30)

ANOVA conducted with weighted sample estimates, unweighted F-tests of significance, *p < .05; **p<.01

Among teachers in the early elementary grades (grades K-3)

281. *Id.*
282. *Id.* at 21-23.
283. *Id.*
284. *See* Figures 2 and 3. *See* BETTS, ET AL., *supra* note 28.
285. *See* Figure 4.

surveyed for the California class size reduction study,[286] there are substantial differences in the training possessed by emergency permit teachers and others in terms of the extent of coursework they have had in elementary education, reading and mathematics methods, special education, and strategies for teaching ELL students.[287]



However, among teachers on emergency permits there are very large differences in the qualifications of those hired into schools serving different proportions of minority and low-income students. In 2000, the teachers hired on emergency permits in predominantly white schools were much more highly experienced and had much more extensive training in elementary education than those in high-minority schools.[288] Nearly three-quarters (72%) of these teachers in predominantly white schools had at least six years of experience, as compared to only 7% of the emergency permit (EP) teachers in high-minority schools. In addition, EP teachers in predominantly white schools had nearly three times as much training in elementary education as did EP teachers in high-minority schools. Since emergency permits can be renewed for a maximum of five years,

286. *See* BRIAN M. STECHER & GEORGE W. BOHRNSTEDT, CSR RESEARCH CONSORTIUM, CLASS SIZE REDUCTION IN CALIFORNIA: FINDINGS FROM 1999-00 AND 2000-01 (2002), *at* http://www.classize.org/summary/99-01/index.htm.CSR Research Consortium (2002).

287. *Id.* Tabulations conducted by Linda Darling-Hammond and John Luczak using data from CSR Research Consortium. *See* Table 1.

288. *See* Table 2.

these experienced and trained teachers are most likely to be prepared teachers from out-of-state or re-entrants who were credentialed at one time but need to complete specific requirements to be re-certified in California whereas those in minority schools are more likely to be untrained entrants.

The share of school districts with at least 20% of their teachers underprepared has been increasing, reaching 17% in 2000-01, up from 12% in 1998-99.[289] To a substantial extent, these schools and districts lack the human resources needed to create a productive learning environment.[290] Schools with large proportions of under-prepared teachers have little instructional expertise on their staff and inadequate numbers of expert teachers to help novices develop their skills.[291] As the SRI report noted:

> In such schools, teachers and administrators are hard pressed to provide adequate professional support to their entire faculty. In these hard-to-staff schools, a child's opportunities to receive the kind of instruction needed to meet the state standards are severely compromised.[292]

Some indications about the characteristics of these schools can be gleaned from a recent survey of more than 1,000 California teachers.[293] That survey found that respondents from schools with more than 20% underqualified teachers were disproportionately from majority Latino schools and from schools with very high proportions of "at-risk,"[294] low-income, and ELL students.[295] The schools were disproportionately likely to be year-round multi-track schools and to be places where teachers report high turnover, poor working conditions, low-quality materials, lack of technology, and low-quality professional development.[296]

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289. SHIELDS ET AL., RESEARCH FINDINGS, *supra* note 278, at 21.

290. *Id.*

291. *Id.*

292. *Id.*

293. LOUIS HARRIS, A SURVEY OF THE STATUS OF EQUALITY IN PUBLIC EDUCATION IN CALIFORNIA, A SURVEY OF A CROSS-SECTION OF PUBLIC SCHOOL TEACHERS (2002).

294. An "at-risk" index was calculated for the Harris study that calculates a combined value for the proportion for students who are eligible for free or reduced-price lunch, the proportion eligible for CalWorks, and the proportion of limited English proficient students. *See id.* at 9.

295. *Id.*

296. *Id.* at 10-11.

Table 3
Characteristics of California Schools with Concentrations of Underqualified Teachers
(Teacher Sample, respondent n =1009)

	Respondents from schools where at least 20% of teachers are underqualified	Respondents from schools where 81% or more of teachers are fully qualified
% of Respondents by School Type	18.1%	81.9%
School Demographics		
% from Majority Latino schools*	61.3%*	19.8%
% from Racially/ethnically mixed schools	28.6%*	36.6%
% from Majority non-Latino white schools	10.1%*	43.5%
% from schools with 81-100% at-risk score	54.3%*	13.1%
% from schools with 61- 80% at-risk score	26.2%*	19.4%
% from schools with 52- 60% at-risk score	7.9%*	8.3%*
% from schools with 0- 51% at risk score	11.6%*	59.3%*
% from schools in top quintile of free-reduced price lunch	51.8%*	12.8%
% from schools in top quintile of ELL population	50.8%*	14.7%
School Conditions		
% from Year round multi-track schools	24.0%*	12.5%
% reporting "serious" problem with turnover rate	48.4%*	16.0%
% reporting professional development poor	36.2%*	20.3%
% rating working conditions poor	34.1%*	20.2%
% rating physical facilities poor	43.4%*	31.0%
% reporting technology unavailable	41.7%*	29.9%
% reporting poor quality texts & materials	22.8%*	15.6%

[1] Underqualified includes all teachers who do not hold a preliminary or clear credential
Independent Z-tests of proportions, *p < .05
Source: Peter Harris Research Group, data tabulations, table 91.

Another way to examine these data is by student population served. Schools with high concentrations of Latino, ELL, and low-income students are extraordinarily likely to have high con-

centrations of underqualified teachers.[297] For example, of teachers teaching in majority Latino schools, in schools at the top quintile of English language learners, or in schools with an "at risk" factor above 80%, nearly half are in schools that have more than 20% underqualified teachers.[298]

A. *The Problems of Heavily-impacted Schools*

SRI researchers have used a benchmark of 20% or more teachers without preliminary or clear credentials to demarcate schools that have "high concentrations" of underqualified teachers, arguing that such high levels "can create problems throughout the entire school community."[299] These problems include a lack of mentors; high turnover of the untrained teachers, which creates continual hiring needs and instability; and an erosion of professional development for other teachers in the building.[300] In addition, the report describes disincentives for keeping other credentialed teachers in the school, who describe their embarrassment about the "lack of professionalism" and low levels of skills displayed by many uncredentialed teachers, and the resulting instructional burden on other teachers to make up for the shortcomings of their colleagues.[301]

In addition, schools with high turnover often staff classrooms with a continuous string of short- and long-term substitute teachers.[302] This contributes to the instability students experience and to the low quality of instruction, since substitutes also are frequently underqualified and there is little curricular coherence when personnel are constantly changing. Teachers and administrators interviewed for this case noted that many classes are taught for a substantial part of the year without a permanent, credentialed teacher.[303] They repeatedly testified

297. *Id* .at 10.
298. *Id.* at 10.
299. SHIELDS, ET AL., RESEARCH FINDINGS, *supra* note 278, at 47.
300. *Id.*
301. *Id.* at 47-48.
302. *Id.* at 48.
303. Deposition of Toai Dao at v. 1, 182:24-183:8, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Dao-t1.pdf (last visited Apr. 10, 2003); Deposition of Salyer at v. 1, 150:2-154:1, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Salye-a1.pdf (last visited Apr. 10, 2003); Deposition of Thomas L. Ibarra at v. 2, 346:11-23, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Ibarr-t2.pdf (last visited Apr. 10, 2003); Deposition of Nicol LaCava at v. 1, 88:16-89:14, Williams, et al. v. California

that little learning goes on in classrooms with substitute teachers, as many substitutes in highly-impacted schools lack the content knowledge and teaching skill for the class they teach and most focus only on classroom control or "babysitting."[304] The effects on students' learning were generally described in negative terms:

> [The substitutes] were not trained and, honestly, they weren't qualified for the job. When a substitute teacher works as a long-term teacher, say, three months at a time, there is a lot of time they spend just kind of doing busy work and baby-sitting with the kids because they don't really understand how to deliver curriculum or how to assess. They don't know that. One man who was there was a nice man, but he was an art teacher and he didn't really know what he was doing and they really suffered and I know they suffered because I taught them the following year and they lacked some basic skills they should have gotten when they were in his class.[305]

> [In a case with multiple substitutes] [t]hose kids were really suffering. They weren't learning for months .... I don't even remember there being somebody permanent in there, honestly. There may have been, but it seemed to me like when there was an adult in there, that they would be watching the non-educational films we talked about earlier or maybe doing textbook homework without any support from anybody who spoke Spanish or knew how to teach it.[306]

In some schools, almost always in districts with high proportions of low-income and minority students, the proportion of underqualified teachers exceeds 50%.[307] For example, a district-by-district analysis of the distribution of teachers in California shows the average proportion of under-qualified teachers at

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(No. 312236), *at* www.mofo.com/decentschools/depositions/LaCav-n1.pdf (last visited Apr. 10, 2003); Deposition of John A. Michaelson at v. 1, 137:11-139:14, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Micha-j1.pdf (last visited Apr. 10, 2003); Deposition of Shane Safir at v. 2, 304:22-305:8, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Safir-s2.pdf (last visited Apr. 10, 2003).

304. Deposition of Dao at v. 1, 182:24-183:8; Deposition of Salyer at v. 1, 150:2-154:1; Deposition of Ibarra at v. 2, 346:11-23; Deposition of LaCava at v. 1, 88:16-89:14; Deposition of Michaelson at v. 1, 137:11-139:14; Deposition of Safir at v. 2, 304:22-305:8.

305. Deposition of Malabed at v. 2, 310:23-311:13.

306. Deposition of Safir at v. 2, 304:22-305:8

307. FUTERNICK, *supra* note 7.

57.2% in previously state-controlled Compton, where 99% of students are minority and 97% qualify for free and reduced price lunch.[308] At least ten schools in Compton have more than 70% of their teachers working without full credentials.[309] Similarly, in Ravenswood Elementary School District, where more than 90% of students are minority and low-income, the proportion of underqualified teachers is 56.3%.[310] Five of the city's ten schools have at least half of their teachers teaching without full credentials.[311]

These heavily-impacted schools experience a number of negative consequences in addition to the frequent lack of knowledge and skills on the part of individual teachers who are underprepared.[312] One negative consequence is that students are more likely to encounter a string of underprepared teachers, thus experiencing a cumulative effect that is much more damaging to their learning than one year of poor teaching would create.[313]

A second consequence is that, beyond a certain point, the overall expertise in the school is inadequate to support sound educational decision making, or collegial learning.[314] When there are fewer people with training and experience, the "collective knowledge" of a school is weakened.[315] There are few experienced personnel who know good practice, understand the school community, and can diagnose students' needs and how to meet them.[316] Even if there are some knowledgeable teachers on staff, it is impossible for them to carry the load for the entire faculty.[317] With a smaller pool of veteran teachers who can serve as mentors to beginners, there are few resources for novices to learn.[318] The few relatively experienced teachers left in a school are overburdened with leadership responsibilities, thus contributing to their own "burn out."[319]

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308. *Id.*
309. *Id.* at 29-30.
310. *Id.* at 139.
311. *Id.*
312. For estimates of the cumulative effects of poor teaching, *see, e.g.*,. SANDERS & RIVERS, *supra* note 89.
313. *Id.*
314. SHIELDS, ET. AL., RESEARCH FINDINGS, *supra* note 278.
315. *Id.*
316. *Id.*
317. *Id.*
318. *Id.*
319. *Id.*

Finally, concentrations of under-prepared teachers create a drain on schools' financial as well as human resources. For example, emergency permit teachers have a high attrition rate: According to CCTC statistics, between 35% and 48% appear to leave the profession within a year,[320] and two-thirds never receive a credential.[321] This means that schools must continually pour money into recruitment efforts and professional support for new teachers, without reaping dividends from these investments. A recent study in Texas found that teacher attrition can cost school systems $8,000 or more for each recruit who leaves in the first few years of teaching.[322] Instead of using funds for needed school improvements, monies are spent in a manner that produces little long-term payoff. Teachers who benefit from the financial efforts of low-performing schools often end up leaving the profession or moving on to more "desirable" teaching positions.[323]

For these schools, there may be less visible long-term effects on teacher effectiveness for those who stay. Even the relatively small proportion of emergency permit teachers who manage to complete a credential are not necessarily as well-prepared as other teachers.[324] A study by SRI found that the many teachers in urban, disadvantaged schools who enter teaching on emergency credentials and take courses while they teach ultimately have fewer opportunities to develop expertise than teachers who are prepared in coherent programs of pre-service preparation that include student teaching and thoughtful, well-sequenced

320. In 1996-97, CCTC reported one-year attrition rates for emergency permit teachers of 35% for elementary recruits and 48% for secondary recruits. *See* California Commission on Teacher Credentialing, Emergency Permit Persistence Data, 1996-97, compiled by Certification and Waiver Division, 1/9/98 on first time Multiple and Single Subject Long Term Emergency Permits)(unpublished internal memo). In 1998-99, the CCTC reported that one-year attrition rates for emergency permit teachers were 35%. *See* SUZANNE TYSON & HELEN HAWLEY, CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, PRE-INTERNSHIP TEACHER TRAINING PROGRAM: A PROGRESS REPORT 21-22 (Oct. 2000).

321. Letter from Linda Bond, Director of Governmental Relations, CCTC, to Linda Darling-Hammond (Nov. 29, 1999) (on file with author). The letter indicates that "two-thirds of emergency permit teachers do not receive full teaching certification." *Id.*

322. *See generally* TEXAS CENTER FOR EDUC. RESEARCH, THE COST OF TEACHER TURNOVER (2000).

323. *See generally* STEPHEN CARROLL, ET AL., *supra* note 18.

324. SHIELDS ET AL., *supra* note 278; OFFICE OF THE CHANCELLOR, CALIFORNIA STATE UNIVERSITY, PREPARING TEACHERS FOR READING INSTRUCTION (K-12): AN EVALUATION BRIEF BY THE CALIFORNIA STATE UNIVERSITY (2002).

coursework.[325]

The report notes that these teachers—who comprised more than half of those surveyed by SRI—do some or all of their "student" teaching as teachers of record in their own classroom, thus not receiving the opportunity to learn to teach that comes from the modeling and daily supervision provided by a more expert mentor, something generally agreed to be one of the most important features of successful teacher education.[326] These same teachers rarely receive intensive mentoring; furthermore, the courses they take frequently are out of sequence and watered down because teachers are focused more on classroom management than teaching and learning and have no time to do reading or homework while they are teaching and attending school simultaneously. Referring to the various shortcuts to these teachers' training both in the classroom and at the university, the researchers note that, "this situation raises the question of how much influence [the teacher education programs] can have over the development of pedagogical foundations of these teachers."[327] A recent study of California State University teacher education graduates reinforces this point, noting that those who prepared to teach after having entered teaching through emergency routes or internships feel less well prepared than those who had experienced a coherent program of preservice preparation and were perceived as less competent by their supervisors.[328]

Although some universities and districts have developed high-quality internship programs,[329] recent evaluations of California intern programs have raised concerns about the lack of support interns receive. McKibbin's summary of two CCTC evaluations noted:

> The Commission's two evaluation studies showed that the quality and comprehensiveness of the curriculum in district intern programs varied a great deal. . . . In the 1987 and 1994 studies, interns reported that the formal "mentor" support

325. SHIELDS ET AL., RESEARCH FINDINGS, *supra* note 278.

326. *Id.* at 53.

327. *Id.* at 55.

328. *See generally* OFFICE OF THE CHANCELLOR, PREPARING TEACHERS *supra* note 208; *see also* OFFICE OF THE CHANCELLOR, FIRST SYSTEMWIDE EVALUATION *supra* note 208.

329. *See, e.g.*, JON SNYDER, NATIONAL COMMISSION ON TEACHING AND AMERICA'S FUTURE, NEW HAVEN UNIFIED SCHOOL DISTRICT: A TEACHING QUALITY SYSTEM FOR EXCELLENCE AND EQUITY 5, 45-60 (1999).

> system is not supplying assistance at a level of intensity that would be beneficial.... Twelve percent of the interns reported that they had not had contact with a mentor or other person formally assigned to them. Others reported that formal support was inadequate because their mentors were employed at schools some distance from their sites, or taught subjects in different areas or grade levels than the interns. The numbers of support conferences and observations were lower than what would reasonably be expected, and these numbers declined from 1987 to 1994.... As a result of the two studies, the Commission concluded that significant aspects of district intern programs must be improved, such as the unevenness of intern support and the use of District Intern Certificates to provide a convenient hiring mechanism rather than as a professional preparation program.[330]

The fact that entry without training is becoming the normal pathway into teaching for the teachers of disadvantaged students may mean that many fail to become as competent as other teachers, even if they eventually go through a teacher education program, since the kind of courses and coaching they eventually receive appear to be less rigorous and systematic. The SRI researchers raise the concern that even interns, who should typically have more support than emergency credentialed teachers, may be less well prepared in their content areas (a prerequisite to entry) as well as pedagogy:

> [P]rincipals reported that interns were [less] well prepared than ... fully credentialed recent hires ... in terms of their subject matter knowledge, their knowledge of instructional and assessment techniques, and their ability to[teach basic skills to a diverse] student population.[331]

> [I]t is hard to make the case for placing teachers with little preparation in the most challenging classrooms in the state. Similarly the rapid expansion of (intern and pre-intern) programs clearly will provide more support for teachers who otherwise might be on emergency permits. Yet these programs do nothing to shore up incentives for prospective teachers to get trained before taking over a classroom. In fact, the expansion of the intern programs without substantial efforts to reinforce incentives for teachers to receive train-

330. MICHAEL MCKIBBIN, CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, TEACHING INTERNSHIP PROGRAMS: ALTERNATIVE PREPARATION AND LICENSURE IN CALIFORNIA: PURPOSES, PROCEDURES AND PERFORMANCE 6-7 (1998).

331. SHIELDS ET AL., RESEARCH FINDINGS, *supra* note 278, at 65.

ing before teaching will only flood schools serving the neediest students with more underprepared teachers.[332]

B. *The Status of English Language Learners*[333]

California's approximately 1.5 million English language learners (ELLs) enrolled in K-12 schools are particularly impacted by the unavailability of qualified teachers.[334] Schools with 40% or more ELLs have almost six times the percentage of teachers who are not fully credentialed as do schools that have fewer than 7.5% ELL students. [335]

Analyses of the year 2000 Class Size Reduction study teacher survey data suggest that among California's 102,266 teachers in grades K-3, just over three-fourths (75.6%) teach at least some students who are new English language learners and 63.9% teach more than 10% new English language learners.[336] Fewer than half of either group holds a CLAD credential, and a sizeable minority (17% of those who teach ELL students and 14% of those who teach more than 10% English language learners) have not taken a single course to help them prepare to teach this population.[337]

The state standard for teaching ELL students is the possession of a CLAD credential.[338] Although most ELLs attend high-minority schools, among those who teach ELLs, the proportion of teachers who have earned a CLAD credential is noticeably lower in high-minority schools and in high-poverty schools than in more affluent and less heavily minority schools.[339] For example, of teachers who teach at least 10% English language learn-

332. *Id.* at 67.

333. Portions of this section were contributed by Kenji Hakuta.

334. RICHARD RUMBERGER & PATRICIA GANDARA, THE SCHOOLING OF ENGLISH LEARNERS, POLICY ANALYSIS FOR CALIFORNIA EDUCATION (PACE), CRUCIAL ISSUES IN CALIFORNIA EDUCATION 2000: ARE THE REFORM PIECES FITTING TOGETHER? 23-44 (2000).

335. *Id.* at 34.

336. About 45% of California's new English language learners are in grades K-3, so this group of teachers represents a sizable share of those teaching ELL students statewide. *See* CALIFORNIA DEPARTMENT OF EDUCATION, EDUCATIONAL DEMOGRAPHICS UNIT (1999-2000).

337. *See* Table 4 below. Tabulations conducted by Linda Darling-Hammond and John Luczak using data from the CSR Research Consortium.

338. Although SB 1969 created a less intensive course of study as an option for in-service teachers, the standard that has continued to be used as the expectation for preservice teachers and the accreditation of teacher education programs is the set of knowledge and skills outlined in the CLAD regulations.

339. *See* Table 5; *see also supra* note 334.

ers, 51% of those in low-minority schools and 55% in low-poverty schools have a CLAD credential as opposed to only 30% of those in high-minority schools and 35% in high-poverty schools.[340] In the most disadvantaged schools, teachers of ELLs appear to have the least formal preparation to teach limited English proficient students.

Table 4
Qualifications of Teachers Teaching English Language Learners in CA: Proportions of K-3 Teachers with Different Levels of Training

	Of Teachers who Teach Any ELL Students (unweighted n=576)	Of Teachers who Teach > 10% ELL Students (unweighted n= 466)
% with CLAD credential	40.8%	41.2%
In schools <30% minority	37.9%	50.8%
In schools >90% minority	29.8%*	29.6%*
In schools <10% free/reduced lunch	51.5%	55.2%
In schools >90% free/reduced lunch	34.8%*	34.6%*
% with BCLAD credential	12.3%	14.2%
% who have had 0 courses	17.4%	13.7%
% who have had 1-3 courses	50.8%	52.0%
% who have had 4+ courses	31.7%	34.3%

Source: Tabulations based on data from the AIR/RAND Class Size Reduction Study follow-up survey conducted in 2000 with 786 elementary school teachers in grades K-3. Analysis uses weighted sample estimates and unweighted tests of significance. * $p<.05$

In addition, many instructors who are charged with special instruction in English language development have not completed the specialized training that is required by the state for this role. As of 2000-01, approximately 121,000 California public school teachers reported that they taught ELL students in classes that are intended to support English Language Development (ELD) or sheltered content instruction,[341] yet fewer than 60% were certified to do so by the CCTC.[342] Additionally, more than 12,000 teachers reported teaching in bilingual teaching assignments, but only about 8,500 held the appropriate credentials for

340. *Id.*

341. CALIFORNIA DEPARTMENT OF EDUCATION, TEACHERS PROVIDING ENGLISH LANGUAGE DEVELOPMENT (ELD), SPECIALLY DESIGNED ACADEMIC INSTRUCTION IN ENGLISH (SDAIE), OR PRIMARY LANGUAGE INSTRUCTION TO ENGLISH LEARNER (EL) STUDENTS IN CALIFORNIA PUBLIC SCHOOLS, 2000-01, EDUCATION DEMOGRAPHICS UNIT.

342. *Id.* This figure represents certification through CLAD or its equivalent; SB 1969 teachers and teachers currently in training are not included in these figures.

doing so.[343]In addition to the large proportion of unqualified teachers they encounter, ELLs often receive the bulk of their instruction from the over 30,000 bilingual aides and paraprofessionals employed by California school districts, most of whom are not specially trained.[344]

Table 5
Disparities in Curriculum and Teaching Resources, by School SES

Characteristics of Teaching Force and Curriculum in Schools	Lowest SES Schools (bottom quintile)	Highest SES Schools (top quintile)
% with 0-2 years experience (K-6)	23.8	17.2
% with 10 or more years experience (K-6)	43.3	53.3
% with bachelor's degree or less (K-6)	32.6	8.8
% with master's degree or more (K-6)	21.7	27.0
% not fully certified (K-6)	21.7	2.0
% "a-f" classes (9-12)	51.8	63.2
% AP classes	2.0	3.2

Source: Betts, Rueben, and Danenberg (2000), Table B1

In case studies of seventeen urban and rural California schools with large proportions of uncredentialed teachers, Social Policy Research Associates found that teachers generally felt especially unprepared to meet the needs of their English language learners and typically received little or no professional development training in this area.[345] Although most of the schools had large proportions of ELL students, few offered any focused instruction on English language development and fewer had teachers with any preparation to do so.[346] Many teachers reported that ELL students in their classrooms were frequently left to fend for themselves and were often unable to follow class instruction.[347] With a few exceptions, the professional development offered in the small number of schools that provided any was deemed ineffective by the teachers who were interviewed.[348]

Adequate materials are frequently as scarce as well-prepared teachers in schools serving large numbers of limited

343. CALIFORNIA DEPARTMENT OF EDUCATION, BILINGUAL STAFF, BY TYPE OF TEACHER, BY LANGUAGE OF INSTRUCTION, BY SCHOOL, EDUCATIONAL DEMOGRAPHICS UNIT, LANGUAGE CENSUS (2000-2001).

344. PROPOSITION 227 TASK FORCE, CALIFORNIA DEPARTMENT OF EDUCATION, EDUCATING ENGLISH LEARNERS FOR THE 21ST CENTURY (2000).

345. FRIEDLAENDER & FRENKEL, *supra* note 121.

346. *Id.*

347. *Id.*

348. *Id.*

English proficient students.[349] In a recent survey, nearly half (49.4%) of a sample of more than 1,000 California teachers said they did not have enough books and reading materials in the home language of the children of the class.[350] Teachers in schools serving a majority of Latino students and those in predominantly minority mixed race schools were most likely to say they did not have enough home-language materials.[351] In these schools most teachers reported not having enough materials or having none at all, whereas in predominantly white schools a large majority of teachers reported having enough of these materials.[352]

Table 6
Co-incidence of poor working conditions and other school conditions
(Unweighted n=1008)

Of teachers who rate their working conditions poor:		% Of total sample:
% in predominantly minority schools	85.5%**	61.0%
% in schools with at-risk score >50%	79.8%**	49.2%
% reporting poor physical conditions	75.6%**	32.3%
% reporting professional development is poor	63.1%**	24.4%
% reporting technology is unavailable	61.9%**	31.0%
% reporting turnover rate is a "serious" problem	51.6%**	21.5%
% reporting not enough books to take home	49.8%**	31.7%
% reporting low-quality textbooks	37.5%**	17.1%
% reporting a lot of trouble getting substitutes	38.2%**	12.9%
% reporting not enough books in classroom	28.4%**	11.7%

* $p < .05$; ** $p < .01$ in independent Z-Tests for proportions.

C. *The Confluence of Educational Disadvantages*

Ultimately, those schools with the fewest resources in terms of teaching expertise, typically also have fewer resources of all other kinds as well.[353] A recent Public Policy Institute study discovered that large disparities in teachers' experience, general education (degree level), and preparation for teaching (as measured by certification status) across schools are associated with equally large disparities in access to curriculum as measured through the percentage of high school courses that satisfy entrance requirements at the University of California (the "a-f"

349. HARRIS, *supra* note 293, at 9.
350. *Id.*
351. *Id.*
352. *Id. See also* tbl. 8.
353. *See* BETTS, ET AL., *supra* note 28.

courses) and Advanced Placement courses.[354] Both of these are strongly related to students' socioeconomic status.[355]

State data also show that students in low-achieving and low-SES schools are more likely to be in large schools, overcrowded schools, and schools with year-round schedules, all of which pose disadvantages both for student learning and for attracting and retaining well-qualified teachers.[356]

The Harris survey data indicate that these are disproportionately schools that serve a majority of Latino and LEP students, where teachers are significantly more likely to report that their schools have negative working conditions and poor physical facilities, low-quality professional development, lack technology, and run a year-round multi-track schedule.[357] Teachers in schools serving a majority of white students were least likely to report these conditions.[358] These conditions appear to be strongly correlated. As Table 7 shows, teachers who report their schools have poor working conditions—most of which serve a majority of "at-risk" and minority students—also are significantly more likely to report that their schools have poor physical facilities, not enough books in classrooms or to take home, unavailable technology, and low-quality texts. They also report that professional development is poor.[359] In addition, teachers in such schools report that they have difficulty getting substitutes and that turnover is a serious problem.[360]

These conditions extend to nearly all kinds of instructional materials, and do not appear to be improving substantially.[361] In 1998, elementary teachers surveyed in the Class Size Reduction Study in low-income and high-minority schools were significantly more likely than those in high socioeconomic schools to say they lacked every kind of teaching material, with the exception of materials for ELL learners.[362]

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354. *Id.*

355. *Id. See* Table 5.

356. *Id.*; CALIFORNIA TEACHERS ASSOCIATION (CTA), LOW-PERFORMING SCHOOLS = HIGH PRIORITY SCHOOLS (2000).

357. Harris, *supra* note 293, at 12, tbl. at 10.

358. *Id.*

359. *Id.*

360. *Id.*

361. Tabulations conducted by Linda Darling-Hammond and John Luczak using data from the CSR Consortium.

362. However, schools with fewer minorities and low-income students also much less likely to serve ELL students. As noted above, teachers who *serve* ELL students reported lower availability of such materials in high-minority schools. *Id.*

Table 7
Availability of Materials in Elementary Schools, By Type, 1998
(% of K-3 Teachers Reporting Materials "Always Available" and "Never Available"
(Unweighted n=956)

Percent of teachers reporting materials were always available (never available), 1998	<30% minority	>90% minority	<10% free/ reduced lunch	>90% free/ reduced lunch
Textbooks – always available	87.6%	68.0%**	82.9%	56.8%**
(never available)	(.2%)	(.4%)	(0)	(.5%)
Workbooks – always available	67.6%	41.6%**	62.1%	38.2%**
(never available)	(5.3%)	(9.0%)	(5.3%)	(8.1%)
Manipulatives– always available	88.7%	75.0%**	81.4%	69.6%
(never available)	(.7%)	(5.3%)	(.5%)	(5.9%)
AV equipment– always available	66.9%	45.6%**	51.3%	46.3%
(never available)	(2.0%)	(2.0%)	(3.2%)	(3.1%)
Computer equip.– always available	50.6%	48.7%	58.9%	44.1%*
(never available)	(7.6%)	(13.9%)*	(9.4%)	(15.4%)
Art materials – always available	77.7%	53.8%**	80.6%	53.7%**
(never available)	(1.1%)	(5.1%)	(.5%)	(6.1%)
ELL materials – always available	29.5%	44.6%**	27.4%	49.0%**
(never available)	(4.1%)	(6.4%)	(4.6%)	(2.7%)
Materials for students with disabilities – always available	27.1%	14.1%**	23.7%	17.8%
(never available)	(8.1%)	(17.2%)	(7.3%)	(16.7%)

Tabulations using weighted sample estimates from the Class Size Reduction Study survey conducted in 1998 with elementary school teachers in grades K-3. Unweighted tests of significance. Chi Square, *p<.10, **p<.001

Table 8
Amount of money K-3 Teachers Reported Spending in a Year on Materials for the Classroom (2000)
(Weighted mean)

< 10% minority	$466	<10% free / reduced lunch	$637
>90% minority	$687	>90% free / reduced lunch	$735

Tabulations using weighted sample estimates from the Class Size Reduction Study follow-up survey of teachers, 2000.

While a minority of California teachers reported improvements in the availability of some of these materials when they were re-surveyed in 2000 (between 10% and 20%, depending on the item), most said they had the same amount or less as compared to two years earlier.[363] The one item for which availability grew substantially was computer equipment: about 37% of teachers reported they had greater access to computer equipment in 2000 than in 1998.[364] However, in this category as in every other one, teachers in high-minority and low-income schools were much more likely than those in more advantaged

363. *Id.*
364. *Id.*

schools to say they had less availability in 2000 as compared to two years earlier.[365] As Table 9 shows, teachers in low SES schools not only have less access to materials, they spend substantially more of their own money on class supplies.[366] As one teacher explained, shortages of materials can affect teacher attrition:

> I know that a . . . substantial number of teachers at Muir purchase supplies from their own money . . . . it came up in a few conversations that I had with teachers who were leaving Muir as being one of the explanatory factors for why they were leaving . . . . [O]ne of the things that really got them down, was having to constantly go out and resupply their own classrooms with their own time and money.[367]

All of these things not only contribute to poorer quality education for students, they also contribute to the disincentives to attracting and retaining qualified teachers in these schools. Why would qualified teachers who have options choose to teach in overcrowded, under-resourced schools with students who have high levels of educational needs when they could take other jobs in or out of teaching?

Table 9
1999-2000 Teacher Salaries in the Continental Far West States, Adjusted for Cost-of-Living

	Beginning Salary	Average Salary	State Ranking
Oregon	31,403	47,652	3
Nevada	29,213	43,798	12
Washington	26,284	40,687	22
California	26,220	38,845	32
US Average	27,989	41,820	NA

Source: Nelson, Drown, & Gould, 2001, pp. 8, 13, 38 (with cost of living for beginning salaries calculated using beginning salary to adjusted average salary ratios).

VI. REASONS FOR DISPARITIES IN QUALIFIED TEACHERS

With our current knowledge, there is every reason to believe that the differences in teacher qualifications across schools

365. Analyses of California Class Size Reduction teacher survey database by Darling-Hammond and Luczak.

366. *Id.*

367. Deposition of Caputo-Pearl at v. 1, 146:1-146:20, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Caput-m1.pdf (last visited Apr. 10, 2003).

reflect differences in teacher quality, although these are not perfectly measured. The strong correlation among the various teacher measures, combined with the reliability of many of the individual measures and the agreement with the limited information on the distribution of teacher quality as measured by student value-added indicators, strongly suggests that the differences we see in qualifications reflect differences in teacher quality. As noted above, even among teachers holding emergency permits, the much smaller number hired in more affluent, low-minority schools have much greater teacher preparation and experience, suggesting labor market differentials that are associated with student socioeconomic status, as seen in Table 3.

A. *The Role of Salaries*[368]

Teachers' salaries can affect the supply of teachers both in the short-run—especially the distribution of teachers across districts—and in the long-run, in terms of the proportion of individuals willing to prepare to teach.[369] Starting salaries within districts can influence whether the district is an attractive employer for beginning teachers; salary structures can influence whether the district is an attractive employer for veteran teachers.[370]

There is a large literature suggesting that teachers respond to wages in their decisions to enter and remain in teaching. Studies of the decision to enter teaching typically rely on national survey data such as the National Longitudinal Study of the High School Class of 1972,[371] High School and Beyond,[372] and comparable data from the UK.[373] As a group, these studies show

368. This section includes substantial contributions by Susanna Loeb.

369. *See* J.M. POGODZINSKI, CAL. ST. UNIV. FAC. RESEARCH FELLOW'S PROGRAM, THE TEACHER SHORTAGE: CAUSES AND RECOMMENDATIONS FOR CHANGE 11-18 (2000).

370. *Id.*

371. *See generally* Charles F. Manski, *Academic Ability, Earnings, and the Decision to Become a Teacher: Evidence from the National Longitudinal Study of the High School Class of 1972*, *in* PUBLIC SECTOR PAYROLLS (D.A. Wise ed., 1987); TODD R. STINEBRICKNER, NATIONAL BUREAU OF ECONOMIC RESEARCH, AN ANALYSIS OF OCCUPATIONAL CHANGE AND DEPARTURE FROM THE LABOR FORCE: EVIDENCE OF THE REASONS THAT TEACHERS QUIT (working paper 2000).

372. *See* Eric A. Hanushek & Richard Pace, *Who Chooses to Teach (and Why)?*, 2 ECON. OF EDUC. REV. 14, 101 (1995).

373. *See generally* Peter J. Dolton & G.H. Makepeace, *Female Labor Force Participation and the Choice of Occupation: The Supply of Teachers*, 37 ECON. REV. 1393 (1993); *see generally* Peter Dolton & Wilbert van der Klaauw, *The Turnover of Teachers: A Competing Risks Explanation*, 81 REV. ECON. STATS. 543 (1999).

that individuals are more likely to choose to teach when starting teacher wages are high relative to wages in other occupations. Manski, for instance, estimated that an 11% increase in the weekly salary of teachers increases the proportion of college graduates who work as teachers by 26%.[374]

National survey data have also been used to study teacher attrition and occupational change.[375] Baugh and Stone, for example, find that teachers are at least as responsive to wages in their decision to quit teaching as are workers in other occupations.[376] Teachers are more likely to quit when they work in districts with lower wages.[377]

Studies employing administrative data to study teacher quits and transfers underscore the importance of higher teacher wages, especially relative to alternative wage opportunities.[378] Hanushek, Kain, and Rivkin found, using Texas panel data on teachers and students, that increasing teacher salaries within a district by 10% reduces the probability of a teacher leaving the district by 2% for a teacher with up to two years of experience and by 1% for a teacher with three to five years of experience.[379] Gritz and Theobald found similar trends in retention linked to district and state wage levels for a sample of Washington State teachers, with the effects of salary differentials higher at the start

374. Manski, *supra* note 371.

375. *See generally* William H. Baugh & Joe A. Stone, *Mobility and Wage Equilibration in the Education Labor Market*, 2 ECON. OF EDUC. REV. 253 (1982). *See also* Peter Dolton & Wilbert van der Klaauw, *The Turnover of Teachers: A Competing Risks Explanation*, 81 REV. OF ECON. STATS. 543 (1999); Bill D. Rickman & Carl D. Parker, *Alternative Wages and Teacher Mobility: A Human Capital Approach*, 9 ECON. OF EDUC. REV. 73, 73-79 (1990); Todd R. Stinebrickner, *Estimation of a Duration Model in the Presence of Missing Data*, 81 REV. ECON. STAT. 529 (1999).

376. Baugh & Stone, *supra* note 375, at 253-74.

377. *Id.*

378. *See generally* Dominic J. Brewer, *Career Paths and Quit Decisions: Evidence from Teaching*, 14 J. OF LAB. ECON. 313, 314 (1996); *see also* Daniel Mont & Daniel I. Rees, *The Influence of Classroom Characteristics on High School Teacher Turnover*, 34 ECON. INQUIRY 152, (1996); Richard J. Murnane et al., *The Influences of Salaries and Opportunity Costs on Teachers' Career Choices: Evidence from North Carolina*, 3 HARV. EDUC. REV. 325, 326 (1989); Neil D. Theobald, *An Examination of the Influence of Personal, Professional and School District Characteristics on Public School Teacher Retention*, 9 ECON. OF EDUC. REV. 241, (1990).; Neil D. Theobald, et al., *The Effects of School District Spending Priorities on the Exit Paths of Beginning Teachers Leaving the District*, 15 ECON. OF EDUC. REV. 11-22 (1996).

379. ERIC A. HANUSHEK ET AL., NATIONAL BUREAU OF ECONOMIC RESEARCH, DO HIGHER SALARIES BUY BETTER TEACHERS? 25 (working paper No. 7082) (1999) (prepared for the annual meeting of the American Economic Association).

of the teaching career.[380] Murnane and Olsen, using data on North Carolina teachers who began teaching in 1975, found that a $1,000 increase in each salary step of a district's salary schedule would increase the teacher's mean duration in that district by two to three years.[381] Teachers in high demand fields like mathematics and science were especially vulnerable to salary difference in their decisions to remain in teaching.[382] Such fields have especially high opportunity costs for remaining in teaching given much higher salaries in alternative occupations.[383] Beaudin found that among Michigan teachers who had left teaching and then returned, those who chose to return to their prior district were influenced by district salary levels and overall education funding.[384] In addition, those who returned to teaching tended to be in teaching fields with lower opportunity costs (e.g., less well-paying alternatives outside of education).[385]

A few studies have looked directly at the impact of wage increases on teacher quality.[386] These studies suggest that wages do affect teacher quality.[387] For example, Figlio's analysis of the Schools and Staffing Surveys found that a 1% increase in teacher salaries in a metropolitan area increases the proportion of teachers who have graduated from a selective college by 1.5%.[388] Stinebrickner, using a sample of college graduates from the National Longitudinal Study of the High School Class of 1972, found that, among certified teachers, those with higher SAT scores were less likely to be teaching because of better wage op-

380. *See generally* R. Mark Gritz & Neil D. Theobald, *The Effects of School District Spending Priorities on Length of Stay in Teaching*, 31 J. OF HUM, RESOURCES 477, 477-512 (1996).

381. Richard J. Murnane & Randall J. Olsen, *The Effects of Salaries and Opportunity Costs on Length of Stay in Teaching: Evidence from North Carolina*, 25 J. OF HUM. RESOURCES 106, 118-20 (1990).

382. *Id.*

383. *Id.*

384. Barbara Beaudin, *Former Teachers Who Return to Public Schools: District and Teacher Characteristics of Teachers Who Return to the Districts They Left*, 17 EDUC. EVALUATION & POL'Y ANALYSIS 462-75 (1995).

385. Barbara Beaudin, *Teachers Who Interrupt Their Career: Characteristics of Those Who Return to the Classroom*, 15 EDUC. EVALUATION & POL'Y ANALYSIS 51-64 (1993).

386. *See* David N. Fligio, *Teacher Salaries and Teacher Quality*, *in* 55. ECON. LETTERS 267, 267-71 (1997); *see also* Stinebrickner, *supra* note 375, at 529-42; KAREN J. DEANGELIS, THE RELATIONSHIP BETWEEN TEACHERS' SALARIES AND THE QUALITY OF THE SUPPLY OF RECENT COLLEGE GRADUATES TO TEACHING (2000).

387. *See id.*

388. Figlio, *supra* note 386, at 269.

portunities in other occupations.[389] He estimates that increasing the wage of all teachers by 20% would increase the aggregate proportion of years teaching among members of the sample by 30%.[390] For those who scored in the top one-third of the SAT (presumably those with the greatest occupational options outside of teaching), the likelihood of entering and remaining in teaching is especially sensitive to the extent and nature of the wage incentive.[391] DeAngelis also found that states in which teachers' salaries rose the most during the 1980s witnessed the greatest increase in the quality of teachers relative to non-teachers as measured by quality of undergraduate education.[392]

An alternative way to assess whether wages can be used to attract higher-quality teachers is to look at the effect of teacher wages on student outcomes. Based on a meta-analysis of about sixty production function studies, Greenwald, Hedges, and Laine estimated larger effect sizes for student achievement associated with increases in teacher salaries (as well as for teacher experience and education, which are rewarded in teacher salary schedules) than for other resources like reduced pupil-teacher ratios.[393] Ferguson's analysis of student achievement in Texas also concluded that there were increases in student achievement associated with the use of resources to purchase higher quality teachers.[394] In a paper looking across states in the United States from 1960 through 1990 and across districts in California from 1975 through 1995, Loeb and Page found that student educational attainment increased most in states and districts that increased their wages.[395]

B. *The Role of Working Conditions*

Overall, substantial evidence suggests that wages play a role in attracting and retaining teachers. There is also evidence from surveys of teachers that working conditions, including professional teaching conditions, play a role in their decisions to leave teaching in a particular school or district or, sometimes, to

389. Stinebrickner, *supra* note 375, at 538.
390. *See id. generally.*
391. *Id.* at 538.
392. DEANGELIS, *supra* note 386, at 55.
393. *See generally* Greenwald et al., *supra* note 192, at 361.
394. Ferguson, *supra* note 29, at 485-88.
395. *See generally* Susanna Loeb & Marianne E. Page, *Examining the Link Between Teacher Wages and Student Outcomes: The Importance of Alternative Labor Market Opportunities and Non-Pecuniary Variation*, 82 REV. ECON. STAT. 393 (2000).

leave the profession altogether.

Teachers' plans to remain in teaching are highly sensitive to their perceptions of their working conditions.[396] In 1994, about 33% of public school teachers and 49% of private school teachers reported they plan to remain in teaching as long as they are able.[397] These proportions were strongly associated with how teachers felt about the provision of resources, administrative support, faculty cooperation, and teacher influence over policy in their schools.[398]

Nationally, there are large differences in the salaries and working conditions that affect teachers in high- and low-wealth schools.[399] In 1994, the Schools and Staffing Surveys found that the best-paid teachers in low-poverty schools earned over 35% more than those in high-poverty schools.[400] Furthermore, teachers in more advantaged communities experienced much easier working conditions, including smaller class sizes and pupil loads, and much more control over decision making in their schools.[401] Teachers in high-poverty schools were much less likely to say they that they had influence over decisions concerning curriculum, texts, materials, or teaching policies.[402] They also were much less likely to be satisfied with their salaries or to feel they had the necessary materials available to them to do their job.[403]

Of those who left teaching between 1994 and 1995, about 27% retired, 37% left for family or personal reasons, and 26% were dissatisfied with teaching or sought another career.[404] However, attrition rates in 1994 were higher in high-poverty than low-poverty schools, and those who left high-poverty schools were more than twice as likely as those in low-poverty schools to leave because of dissatisfaction with teaching.[405] The major areas of dissatisfaction

396. *See* LINDA DARLING-HAMMOND ET AL., *supra* note 230, at 19-23 (1997).

397. *Id.* at 23.

398. *Id.*

399. *See generally* NATIONAL CENTER FOR EDUCATION STATISTICS (NCES), AMERICA'S TEACHERS: PROFILE OF A PROFESSION, 1993-94 (1997).

400. *Id.* at tbl. A 4.15.

401. *Id.*

402. *See* LINDA DARLING-HAMMOND ET AL., *supra* note 230, at 23.

403. *Id.*

404. NCES, *supra* note 399, at 108-10.

405. Low-poverty schools are those with less than 5% of their students receiving free or reduced-price lunch. High-poverty schools are those with more than 50% of their students receiving free or reduced-price lunch. *See* DARLING-HAMMOND, ET AL., *supra* note 230 (Schools and Staffing Surveys, Teacher Followup Survey 1994-95, Tabulations conducted by the National Commission on Teaching and America's Future).

concerned student motivation and discipline, on the one hand, and lack of recognition and support from administration, on the other.[406] Salaries were also a factor, but a less prominent one.[407]

A few studies have modeled the effect of working conditions or school resource allocation on teacher quality or teacher retention. Theobald, for example, found that extremely large pupil-staff ratios are detrimental to staff retention. Theobald and Gritz found that increasing expenditures for teaching materials decreases the likelihood a male teacher will transfer to another school district from his first teaching position, suggesting that better resourced districts may have more holding power.[408] These findings underscore the importance of school and district attributes as determinants of teacher attrition.

VII. THE SITUATION IN CALIFORNIA

Throughout the 1990s, California had steeply increasing demand for teachers due to growing enrollments, increasing retirements, and high attrition rates, especially for beginning teachers.[409] In addition to its burgeoning pupil population and its older-than-average teaching force, California's teacher hiring needs were spiked by the state's 1996 class size reduction initiative reducing class sizes to twenty students in the early elementary grades.[410] As a consequence of these factors, California's teaching force grew from about 220,000 in 1991 to just over

406. *Id.*

407. *Id.*

408. *See* Neil D. Theobald, *Examination, supra* note 378, at 241-50 (1990). *See also* Theobald, et al., *Effects of School District Spending, supra* note 378, at 11-22 (1996).

409. The number of K-12 students in California schools is expected to grow from 5.7 million in 1998-99 to 6.2 million in 2007-08 according to the State of California, Department of Finance. STATE OF CALIFORNIA, DEPRTMENT OF FINANCE, CALIFORNIA PUBLIC K-12 ENROLLMENT PROJECTIONS BY ETHNICITY (1998). Assuming the current pupil-teacher ratio, this growth will require adding about 21,500 new teachers by 2007-08. In 1994, California had a greater share of teachers over fifty (33%) than forty-eight other states, leading to higher retirements in recent years. *See* NCES, AMERICA'S TEACHERS, *supra* note 396. Some estimate that current retirement rates averaging around 2% annually could rise to as high as 4% or 5% by 2007, resulting in a cumulative demand for as many as 50,000 replacement teachers from 1999 to 2007. *See.* SHIELDS ET AL., RESEARCH FINDINGS, *supra* note 278, at 15. Retirements in combination with other sources of teacher attrition (non-retirement attrition averages about 6% annually), produce a yearly demand for about 22,000 replacement teachers. Class size reduction brought approximately 27,000 additional teachers into the California teaching force between 1996 and 1998. *Id.* at 13.

410. SHIELDS ET AL., RESEARCH FINDINGS, *supra* note 278, at 13; *see generally* SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23.

300,000 in 2001.[411] Analysts estimate that California will need to hire about 25,000 teachers annually over the next decade if attrition rates remain the same.[412]

This steep growth and the widespread issuance of emergency credentials in the years since the class size reduction initiative have led to a common perception that there are severe and inevitable teacher shortages in California.[413] This perception, at first blush, appears well founded. According to the California Department of Education, in 2000-01, there were more than 42,000 teachers teaching without full certification (about 14% of the state's teaching force).[414] The comparable proportion of teachers holding substandard licenses in most other states is well under 5%, and in more than twenty states it is close to zero.[415] While some teachers on emergency or temporary licenses are fully trained out-of-state entrants who have not yet satisfied one or another requirement unique to California, most lack essential aspects of preparation for their jobs.[416]

The problems in staffing California schools are not the result of absolute shortages of qualified individuals in the state or the nation, however. There are actually more credentialed teachers available to teach in California schools than there are positions to be filled. Whereas there are about 300,000 K-12 teaching jobs in California, by one estimate there are about 1.3 million individuals who hold teaching credentials in the state.[417]

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411. *Id.*

412. *Id.*

413. *Id.*

414. This figure includes teachers teaching on emergency permits, waivers, pre-intern, and intern credentials. Some emergency permit holders possess full credentials in one field while they teach on an emergency permit in another. CALIFORNIA DEPARTMENT OF EDUCATION, EDUCATIONAL DEMOGRAPHICS UNIT, TEACHER CREDENTIALS AND EXPERIENCE BY SCHOOL, 2001, *at* http://data1.cde.ca.gov/dataquest/dataquest.asp (last visited Apr. 23, 2003).

415. According to the Schools and Staffing Surveys conducted by the National Center for Education Statistics, states that had fewer than 2% of their teachers working without a standard teaching certificate in their main assignment field in 1999-2000 included Alabama, Arkansas, Hawaii, Idaho, Illinois, Indiana, Minnesota, Montana, New Hampshire, New Jersey, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming (tabulations conducted by John Luczak using SASS Teacher Survey data); a standard certificate is defined as either a regular certificate or a probationary certificate granted to beginning teachers who have full preparation while they complete a probationary period).

416. *See* Table 2.

417. Personal communication with Michael McKibbin, Meeting of California Professional Development Task Force, Jan. 18, 2001.

Some of these are individuals who prepared to teach and never entered teaching in the state, entering other careers or going to other states to teach.[418] Many of these are individuals who taught in California and left teaching.[419]

Of course, not all of these individuals would be prepared to re-enter the teaching force. Various studies of teacher supply have found that 20% to 30% of teachers who have left the classroom eventually returned to teaching in the same state.[420] One estimate of California's potential reserve pool indicated that about half of the California registry actually holds valid current credentials, and of these, about half (or a quarter of the total registry) are already teaching.[421] Of the remainder, about 30% have reported they would be willing to consider teaching again.[422] Using current numbers, this would suggest that about 100,000 credentialed teachers might be available to teach under the right set of incentives.[423]

In 1999-2000, before recently enacted policies intended to expand the teaching pool were implemented, there were at least 30,000 fully qualified teachers available to enter California's teaching force for the 25,000 job openings that year.[424] This number included approximately 18,000 first time, new type cre-

418. Regarding entry rates, see DENNIS TIERNEY, CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, A STUDY OF THE EMPLOYMENT PATTERNS OF RECENT GRADUATES OF CALIFORNIA TEACHER EDUCATION PROGRAMS AND THE EMPLOYMENT DECISIONS OF A SELECTED SAMPLE OF CALIFORNIA SCHOOL DISTRICTS (1993); FIRST SYSTEMWIDE EVALUATION, *supra* note 208.

419. Regarding attrition rates, *see, e.g.*, Fetler, *supra* note 28.

420. *See* Beaudin, *supra* note 385, at 51-64; *see also* MASSACHUSETTS INSTITUTE FOR SOCIAL AND ECONOMIC RESEARCH, REPORT ON THE STATUS OF TEACHER SUPPLY AND DEMAND IN MASSACHUSETTS (1987); RICHARD J. MURANE ET AL., WHO WILL TEACH? POLICIES THAT MATTER (1991).

421. HELEN H. CAGAMPANG, POL'Y ANALYSIS FOR CAL. EDUC., TEACHER SUPPLY AND DEMAND IN CALIFORNIA: IS THE RESERVE POOL A REALISTIC SOURCE OF SUPPLY? 23 (1986).

422. *Id.*

423. A study that used a telephone survey and focus groups to estimate the actual size of the reserve pool suggested that about 50% of individuals in the CCTC registry had currently valid credentials, of whom about 47% were already teaching. Of the remainder, about 30% reported being potentially willing to return to teaching—a proportion that other research has found is very sensitive to salary levels at any point in time. *Id.* Applied to the current registry, these proportions would suggest that about 650,000 of 1.3 million credential-holders are valid and about 350,000 are not yet in the teaching force. If these estimates were to hold in the current labor market, there would be about 105,000 individuals (350,000 x .30) who currently hold California credentials and are not teaching, but might be willing to under the right circumstances. These would comprise the potential reserve pool.

424. *See infra* notes 424-26 and accompanying text.

dentials recommended by California colleges and universities in 1999, plus an additional 2,000 first time, new type special education licenses,[425] an estimated 4,000 out-of-state entrants who received licenses,[426] and approximately 8,000-10,000 re-entrants from the reserve pool of teachers in the state.[427] In addition to the large number of prepared and credentialed teachers in California, many states have experienced teacher surpluses for most of the last decade. These surpluses for a number of states are expected to continue into the future, which should create an additional pool.[428]

If California does not lack a sufficient number of individuals prepared for teaching, why are there so many under-qualified teachers in California schools? The shortage problem may better be characterized as a problem of teacher attraction, distribution, and retention. One major problem is that individuals prepared to teach are not entering or staying in public education in California at rates high enough to meet the ongoing demand. Teachers prepared for teaching in California often leave the state or enter other careers when they confront the realities of salaries and working conditions, and attrition rates appear to be higher in California than elsewhere in the nation. Based on several sources of data, a reasonable estimate of current entry rates of California-trained teachers into California schools is between

425. CALIFORNIA COMMISSION OF TEACHER CREDENTIALING, NUMBERS OF MULTIPLE AND SINGLE SUBJECT TEACHING CREDENTIALS ISSUED BY THE COMMISSION UPON THE RECOMMENDATION OF CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION WITH COMMISSION-APPROVED PROGRAMS, 1999-2000, *at* http://www.ctc.ca.gov/ms_ss_numbers_issued/ms_ss_issued.html (last visited Apr. 10, 2003).

426. The number of California teaching credentials issued to out-of-state entrants in recent years dropped from 4,800 in 1997-98 to 3,800 in 1999-2000 and then increased to 4,700 in 2000-01. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, MEETING THE STANDARD: CALIFORNIA COMMISSION ON TEACHER CREDENTIALING: ANNUAL REPORT 13 (2001); SHIELDS, ET AL., *supra* note 23.

427. This conservative estimate is based on an assumption that re-entrants comprise about 25%-30% of the total new hires. Nationally, former teachers comprised about 50% of new hires from the mid-1980s until the mid-1990s. Beaudin, *supra* note 384, at 462-75; ERLING BOE, ET AL., CENTER FOR RESEARCH AND EVALUATION IN SOC. POL'Y, NAT'L TRENDS IN TEACHER SUPPLY AND TURNOVER FOR SPECIAL AND GENERAL EDUCATION (data analysis report no. 1998-DAR1); *see generally* DARLING-HAMMOND ET AL., *supra* note 230. In California, the estimated number of re-entrants was only slightly lower. Fetler found 40% of California teaching positions (approximately 8,500) were filled by re-entrants between 1995 and 1996. *See* Fetler, *supra* note 28.

428. *See generally* AMERICAN ASSOCIATION FOR EMPLOYMENT IN EDUCATION: TEACHER SUPPLY AND DEMAND IN THE UNITED STATES: 1997 REPORT (1998).

70% and 85%, a figure that is comparable with national rates for individuals graduating from teacher education programs.[429] Among those who do not accept jobs in California upon graduation, an unknown number leave the state to teach elsewhere, some pursue additional studies and enter teaching later (nationally, delayed entrants comprise almost one-third of new hires), [430] and some choose other occupations altogether. The likelihood that these individuals will eventually enter teaching depends heavily upon salary levels and working conditions.[431]

In addition to the fact that not all individuals who prepare to teach enter the field, large numbers of teachers leave the profession early in their careers. National data from the Schools and Staffing Teacher Follow-up Surveys suggest that about 30% of beginning teachers leave profession within five years—a rate that may be reduced by access to mentoring supports in the early years.[432] Survival rate data through 1995 indicated that about 40% of California's beginning teachers leave within that time frame,[433] a rate that may have increased in recent years with

429. The California Commission on Teacher Credentialing (CCTC) found in a survey of recent graduates from California institutions that more than 90% seek jobs after graduation and of these, more than 90% take jobs in teaching. *SEE* CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, EMPLOYMENT SURVEY OF NEWLY CREDENTIALIED TEACHERS (1999). This finding replicates that of an earlier similar study. *See generally* TIERNEY, *supra* note 418. However, the CCTC survey response rate was relatively low, approximately 40%, and may have underrepresented individuals who left the state to work elsewhere or who did not take jobs. *See id.* The Legislative Analyst's Office in California estimates entry rates at 70%, near the midpoint of other estimates. *See* SHIELDS ET AL., RESEARCH FINDINGS, *supra* note 278. This statistic is comparable to national entry rate data. National estimates of entry rates for bachelor's degree recipients of degrees in education in 1990 indicate that 73% were employed as educators one year later. *See* NATIONAL CENTER FOR EDUCATION STATISTICS (NCES), DIGEST OF EDUCATION STATISTICS 397 1993. Of newly-qualified teachers in 1990 who held degrees in education, 78% were employed as teachers the following year. *See* NATIONAL CENTER FOR EDUCATION STATISTICS, SCHOOLS & STAFFING IN UNITED STATES: SELECTED DATA FOR PUBLIC & PRIVATE SCHOOLS, 1990-91 (1993); LUCINDA GRAY, ET AL., U.S. DEPARTMENT OF EDUCATION, OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT, NEW TEACHERS IN THE JOB MARKET, 1991 UPDATE 12-13 (1993), and a substantial proportion of the remainder entered as delayed entrants in the subsequent years. BOE, ET AL., *supra* note 427.

430. *Id.*

431. *See generally* Beaudin, *supra* note 385; Beaudin, *Former Teachers, supra* note 386.

432. See LINDA DARLING-HAMMOND ET AL., *supra* note 230, at 21, 34-35 (1997).

433. Fetler, *supra* note 28. This statistic is based on data for cohorts of first-time teachers from 1986 through 1996. Fetler estimates a survival rate of 62.7% of new teachers at the beginning of the fifth year (representing a 37.3% attrition rate at the start of Year 5 and a probable 40% or more attrition rate by the end of Year 5). *See id.*

increased hiring of new teachers and individuals who are unprepared, groups that traditionally leave teaching at higher rates.[434] California data show that uncertified teachers leave the field at very high rates—about 35% to 40% within the first year—thus increasing the annual demand for replacement teachers and reducing the total supply.[435]

In schools with large numbers of low-income and minority students and concentrations of uncredentialed teachers, turnover is extremely high. Teachers and administrators in a number of schools attended by the plaintiffs in the *Williams* litigation report turnover rates of 50% or more annually, causing tremendous disruption to the educational process:

> Teacher turnover at Bryant was very high. The first two years I was there, I think it was 50 percent both years . . . And it was very hard on the school. It was very hard on . . . the administration of the school because they took with them wisdom and practices that were not written down. It was very hard on the kids, this lack of continuity, and it was hard on the community to have new teachers coming and going all the time. That is why I became a mentor teacher in my second year there because I had to. There was so much turnover, it was my turn to be a big buddy and it was only my second year. It was tough.[436]

In another school, teachers described the negative consequences for family involvement and teacher learning due to high teacher turn over rates:

> [H]aving that many new teachers on the staff at any given time meant that there was less of a knowledge base. It meant that it was harder for families to be connected to the school because—you know, their child might get a new teacher every year. It meant there was less cohesion on the staff. It meant that every year, we had to recover ground in professional development that had already been covered and try to catch people up to sort of where the school was heading.[437]

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434. *See, e.g.*, ROBIN R. HENKE ET AL., NATIONAL CENTER FOR EDUCATION STATISTICS, PROGRESS THROUGH THE TEACHER PIPELINE: 1992-93 COLLEGE GRADUATES AND ELEMENTARY/SECONDARY SCHOOL TEACHING AS OF 1997 (2000); GRAY ET AL., *supra* note 429; MURANE ET AL., WHO WILL TEACH?, *supra* note 420.

435. *See supra* notes 320-21 and accompanying text.

436. Deposition of Lili Malabed at v. 2, 333:14-18, 334:22-335:7, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Malabl2.pdf (last visited Apr. 10, 2003).

437. Deposition of Amy Salyer at v. 1, 141:16-141:25, Williams, et al. v. California

A second problem is that many qualified teachers do not find their way into jobs in the districts where they are most needed.[438] The best-qualified teachers are typically recruited to better-funded districts with high levels of support.[439] Teachers who have options want to work in schools that pay them adequately and support their efforts well.[440] Increasing teacher production alone will not solve the distributional problems that create current shortages in disadvantaged schools. Qualified teachers need to find jobs that are appealing to them; they also need to be able to find and gain access to the jobs that are available.[441] In addition, teachers are most likely to stay in schools where they feel successful in their work.[442] In contrast to some states that have enacted comprehensive policies to improve and equalize teaching salaries and conditions across schools and districts, teaching supports are unevenly available across California's schools.[443]

Finally, there are actual teacher shortages in some fields. Data suggest that there are too few candidates in fields like mathematics, physical science, and special education.[444] States that have solved the problems of specific field related problems have created subsidies in the form of service scholarships to underwrite individuals who are willing to prepare to teach in these fields and to provide incentives for them to teach in high-need locations.[445]

Analyses of California's teacher labor market suggest that

(No. 312236), *at* www.mofo.com/decentschools/depositions/Salye-a1.pdf (last visited Apr. 10, 2003).

438. *See, e.g.*, DARLING-HAMMOND ET AL., DOING WHAT MATTERS MOST, *supra* note 230, at 2.

439. *Id.* at 2, 15-17 (fig 12).

440. *Id.* at 16.

441. A 1999 survey of California teachers sponsored by the Center for the Future of Teaching and Learning found that 59% of teachers reported proximity of the district they teach in to their home as important to their choice, 48% cited salaries and benefits, 40% cited the availability of a position, 33% cited previous experience with the district, 33% cited positive reputation of the district, and 30% indicated that support for new teachers was important in their choice. *See* SHIELDS ET AL., *supra* note 278, at 49 (tbl 3-4).

442. *See* DARLING-HAMMOND ET AL., DOING WHAT MATTERS MOST, *supra* note 230, at 21-23.

443. *See, e.g.*, BETTS, ET AL., *supra* note 28, at xii-xiv.

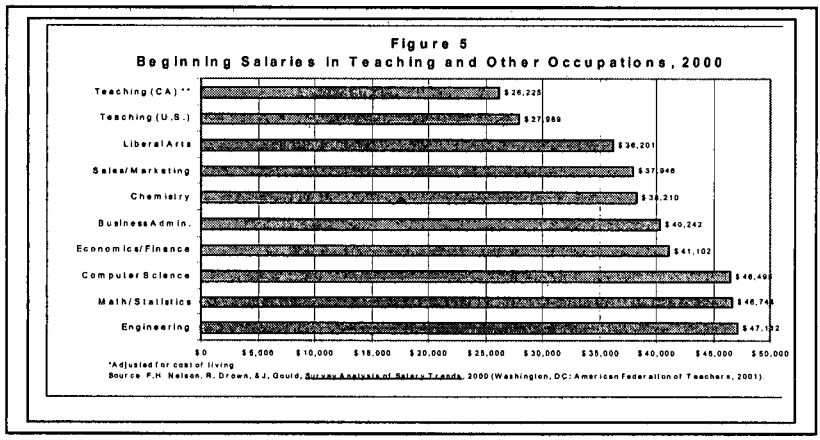
444. AMERICAN ASSOCIATION FOR EMPLOYMENT IN EDUCATION, *supra* note 428, at 8-10 (1998).

445. *See, e.g.*, DARLING-HAMMOND ET AL., DOING WHAT MATTERS MOST, *supra* note 230.

the hiring of large numbers of under-qualified teachers in schools serving disadvantaged students has been a function of several factors over the last decade or more.

A. *Noncompetitive Teacher Salaries that also Are Substantially Unequal Across Districts*

Beginning and average teacher salaries in California, adjusted for cost-of-living, lag behind those of liberal arts graduates by about 25% and behind those for computer science graduates and engineers by about 40%.[446] Even adjusted for teachers' shorter work year (which many teachers spend planning and undertaking professional development), beginning teachers' salaries are nearly 15% lower than those of liberal arts graduates and about 33% lower than those of engineers.[447] Many salary schedules are flat, so that teachers fall further behind their counterparts in other professions the longer they stay in teaching. These differentials are likely to contribute to high non-entry and attrition rates for teaching generally and for teaching fields like mathematics and science particularly. California's average salary ranks thirty-second among the states when adjusted for cost of living.[448] Both beginning and average teacher salaries in California fall below those of others in the continental Far West region, as shown in Table 9 above.[449]



446. F.H. NELSON, ET AL., AMERICAN FEDERATION OF TEACHERS, SURVEY AND ANALYSIS OF TEACHER SALARY TRENDS, 2001 (2001). *See* Figure 5.

447. *Id.*

448. *Id.* In 2000, California's unadjusted salary ranking was seventh in the nation, but its cost of living was one of the highest in the nation, at a ratio of 122.7% of the nation's average. *See id.*

449. *Id.*

Teachers' salaries have slipped steadily both in real dollar terms and as a share of the education budget for more than two decades.[450] As of 1999-2000, California spent 39.5% of its education expenditures on teachers' salaries, a decline of thirteen percentage points since 1964-65, when more than 50% of the education budget supported teachers' salaries.[451]

Finally, and most importantly for the inequities documented in this paper, beginning teachers' salaries in California vary substantially across districts within local labor markets, creating labor market imbalances within and across regions.[452] In an analysis of hiring practices and salaries in California counties, Pogodzinski demonstrated that teachers' real compensation varies considerably across schools districts within the same county, and that these wage differences are a significant factor in explaining the use of emergency permits and waivers.[453]

It is important to take account of differences in teachers' wages within local labor markets where different costs of living and opportunity costs for jobs in other occupations pertain. By examining these factors along with teachers' salaries, Pogodzinski found, for example, that teachers in Fresno County have substantial purchasing power and are considerably better off than most other workers in their county while those in Los Angeles County have lower purchasing power and are less well off than many other workers in their county.[454] Thus, it may not be surprising that emergency credentialed teachers are relatively rare in Fresno County, whereas a large share of emergency permit teachers are hired in districts in and around Los Angeles.[455] Furthermore, there is little dispersion in teacher pay in Fresno County, whereas there are considerable differences in pay in Alameda County.[456] The study finds that the largest proportions of emergency credentialed in Alameda County are hired in lower-paying districts relative to others in the local area.[457] Where teachers are not well-paid relative to other workers in the local county area, salaries are a statistically significant factor in

450. *Id.*
451. *Id.* at 14.
452. *See* Table 11; POGODZINSKI, *supra* note 369, at 19-24.
453. *Id.*
454. *Id.*
455. *Id.* at 19.
456. *Id.* at 20-21.
457. *Id.* at 22.

explaining the use of emergency permits and waivers.[458]

From the perspective of the field, educators point out that both recruitment and retention are more difficult in their districts where salaries are lower than surrounding districts.[459] Statewide, salaries for comparably educated and experienced teachers varied by a ratio of almost two to one in 2000.[460] Perhaps more telling is the range of teacher salaries after they have been adjusted for the local labor market. The range of salaries adjusted for the level of other county wages shows a nearly three to one ratio for the highest- and lowest-paying districts across the state, relative to their local county labor markets.[461]

Table 10
Range of California Salaries, 2000-2001

Salary Schedule Level	Range of Regular Salaries (County, District)		Range of Adjusted Salaries Ratio to State Average (County, District)	
	From	To	From	To
Lowest	$23,194 (Lake County, Kelseyville Unified)	$45,709 (Alameda County, Pleasanton Unified)	0.502 (Santa Clara County, Alum Rock Union)	1.601 (Calaveras County, Vallecito Union)
BA+30, step 1	$27,639 (Tehama County, Reeds Creek Elementary	$49,591 (Alameda County, Pleasanton Unified)	0.597 (Santa Clara County, Gilroy Unified)	1.601 (Calaveras County, Vallecito Union)
BA+60, step 10	$37, 278 (Fresno County, Alvina Elementary)	$69,478 (Santa Clara County, Mountain View-Los Altos Union)	0.880 (Santa Clara County, Gilroy Unified)	2.205 (Riverside County, Corona-Norco Unified)

Data for lowest salary offered and BA+60, step 10 are from the California Department of Education School Fiscal Services Division, "Certificated Teacher Salary Schedule with Placement, 2000-2001"(form J-90). Data for the County salary adjustment (average earnings per job, 1999) is from California Department of Finance Economic Research, "California County Profiles," February, 2002.

458. POGODZINSKI, *supra* note 369, at 19-20.

459. Deposition of Nicolas Rodriguez at v. 1, 97:15-98:8, 116:24-117:6, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Rodri-n1.pdf (last visited Apr. 10, 2003); Deposition of June Tolbert at v. 1, 237:19-238:10, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Tolbe-j1.pdf (last visited Apr. 10, 2003).

460. *See* Table 11.

461. *See* Table 10. This method of adjustment provides some measure of cost-of-living and job market opportunities. A shortcoming is that it does not take into account the mix of jobs in a local labor market—some have many more professional jobs and others have more low-skilled labor jobs. Nonetheless, it does suggest the options facing teachers who are relatively place-bound and it compensates in part for the large cost of living differentials across the state.

As described below, some other states that have overcome teacher shortages have addressed this kind of problem through school funding mechanisms that provide aid to equalize salaries across districts as well as to raise them to market competitive levels.[462] While California has increased teacher salaries very recently, the legislatively targeted salary level is not market competitive in all parts of the state, and the aid is not designed to equalize salaries across districts or to take cost-of-living differentials into account.[463]

Table 11
Most Important Reasons for Planning to Leave Current School Soon, by School Population
(Proportion of respondents in each school type citing each reason)

School Population / Reasons	All teachers planning to leave soon (n=181)	Majority Latino Schools	> 80% At-Risk Schools	Top Quintile ELL
Lack of School Leadership	14.0%	18.3%	19.0%	17.1%
Lack of time for planning & collaboration	9.0%	16.3%	17.9%	14.7%
Salary	6.7%	12.5%	16.1%	11.5%
Lack of supplies, materials	6.0%	10.3%	9.2%	13.4%
Class size or pupil load	3.8%	5.1%	--	5.3%
Lack of mentoring, pd support	2.4%	5.9%	5.3%	4.7%
School facilities	1.9%	1.4%	2.4%	4.3%

Source: Harris (2002).

B. *Poor Working Conditions in Many Schools, Especially Those Serving the Least Advantaged Students*

Teaching conditions steadily worsened after the passage of Proposition 13 in 1979, especially in the least wealthy districts, eventually leading to what has been called the "Mississippication of California schools."[464] Large classes, severe overcrowding of facilities, and inadequate stocks of books and materials have converged to create stressful settings for teaching and learning in many schools, especially those that serve the most

462. *See infra* Recommendation 3.

463. *See generally* California Senate Bill 1643 (SB 1643, O'Connell's Minimum Salary Bill 2000) information, *at* http://www.sbcss.k12.ca.us/legislation/chap2000/sb1643.htm (last visited Apr. 10, 2003).

464. PETER SCHRAG, PARADISE LOST: CALIFORNIA'S EXPERIENCE, AMERICA'S FUTURE (1998).

economically disadvantaged students.[465] A recent California Teachers' Association report found that schools serving high proportions of poor and minority students are markedly larger, have more crowded facilities, and are more likely to be running on year-round schedules.[466]

Districts with the most needy students generally provide the fewest supports in terms of class sizes, materials, resources, and equipment. The Harris survey found that California teachers in schools where turnover is a serious problem are significantly more likely to report that working conditions are poor, physical facilities are poor, there are not enough books to take home, technology is unavailable, texts are of low-quality, and professional development is poor ($p<0.05$).[467] Of these factors, those most significantly related to teachers' plans to leave their school soon ($p<0.05$) include poor physical facilities, class sizes above thirty students, unavailability of technology, and lack of textbooks.[468] In addition, plans to leave soon are significantly related to pessimism about whether working conditions for teachers, physical facilities, the quality of instructional materials, the availability of technology, or the quality of professional development will be better five years from now.[469]

Teachers' reasons for planning to leave their school soon (within one to three years) differ by the type of school and conditions within that school.[470] Overall, the top four reasons cited in the Harris survey by teachers who were planning to leave soon included: (1) lack of school leadership; (2) lack of time for planning and collaboration; (3) salaries; and (4) lack of supplies and materials.[471]

School leadership was a top factor for teachers in all kinds of schools.[472] Salaries were more often cited in high-minority, low-income schools than in others, perhaps because they experience lower salaries relative to those in surrounding districts and perhaps because of the non-compensated demands of their jobs

465. *Id.*
466. CALIFORNIA TEACHERS ASSOCIATION, *supra* note 356.
467. *See* PETER HARRIS, PETER HARRIS RESEARCH GROUP, SURVEY OF CALIFORNIA TEACHERS (2002).
468. *Id.*
469. *Id.*
470. *Id.*
471. *Id.*
472. *Id.*

in those schools.[473] In addition, teachers in schools with poor working conditions and inadequate materials were much more likely to cite lack of materials as a reason for planning to leave.[474]

Table 12
Most Important Reasons for Planning to Leave
Current School Soon, by School Conditions
% of respondents in schools with each condition who cite each reason

School Conditions / Reasons	Poor Working Conditions	Not Enough Books	Tech- nology Unavail.	Over- crowded Classroom	Low- Qualit y PD
Lack of School Leadership	25.0%	23.5%	23.1%	32.5%	27.3%
Lack of time for planning & collaboration	16.4%	28.0%	13.3%	14.6%	15.3%
Salary	7.9%	16.3%	9.6%	10.2%	8.8%
Lack of supplies, materials	11.3%	17.8%	12.9%	13.4%	13.9%
Class size or pupil load	5.4%	12.4%	0.8%	8.8%	6.1%
Lack of mentoring, professional development support	3.8%	8.0%	2.7%	--	4.3%
School facilities	3.9%	8.0%	1.9%	3.9%	4.4%

Source: Harris (2002).

Teachers and administrators deposed for this case described how teachers have left schools and vacancies could not be filled because of poor conditions ranging from vermin and temperature problems to lack of repairs, lack of books and supplies, and lack of classrooms, requiring teachers to rove from room to room.[475] As teachers from various schools explained:

> [T]hey were overwhelmingly working condition-based things that would make [the teachers] leave .... [How teachers are paid] was a part of it, but overwhelmingly the things that would destroy the morale of teachers who wanted to leave were the working conditions, ... working in these facilities, having to pay for these supplies, etcetera.[476]

> [Hawthorne] was a difficult place to work. It was a very big

473. *Id.*

474. *Id.*

475. Deposition of Joel Vaca at v. 1, 202:21-204:10, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Vaca-j1.pdf (last visited Apr. 10, 2003); Deposition of Safir at v. 2, 305:18-306:7, 314:14-315:6., 351:23-352:10; Deposition of Tolbert at v. 1, 238:8-10; Deposition of Caputo-Pearl at v. 1, 101:21-102:12, 145:24-146:20, 147:21-148:5; Deposition of Salyer at v. 1, 142:10-25, 147:8-148:3.

476. Deposition of Caputo-Pearl at v. 1, 147:21-148:5.

> school. The multi- track year-round (schedule) was very hard on teachers. The poor condition of the facilities made it an uncomfortable place to teach. Teachers who had to rove... found that so detrimental to the teaching process and the learning process and the professional growth process that they did not want to continue to have to work in that environment.[477]
>
> [W]hy are the teachers leaving? Well, at least in part because the facilities are horrific, uncomfortable, unhealthy, unsanitary and the teachers don't feel supported by the district or the State or even the administration in trying to fix that. I think they are completely related problems.[478]

Some studies have found that teacher attrition seems related to the demographic characteristics of schools' student populations: specifically, that teachers transfer out of high-minority schools into schools with fewer minority students.[479] The Harris survey data show that long-term vacancies and rotating substitutes are much greater in schools with high proportions of "at-risk" students.[480] The reasons for this may be because of the difficulties posed by the students or neighborhoods themselves or because of the kinds of working conditions and teaching conditions that often pertain in high-minority, low-income schools. The Harris data show some modest associations between the proportion of limited English proficient, low-income, nonwhite, or "at-risk" students in a school and teachers' reported plans to leave the school soon (within one to three years), although none of these bivariate relationships is statistically significant.[481] However, a number of these demographic variables are related to school working conditions, and teachers are significantly more likely to say they plan to leave a school soon if the working conditions are poor.[482]

A set of regression analyses using these survey data linked to other district data on salaries and staffing patterns indicates that turnover problems are strongly influenced by poor working conditions and low salaries, after student characteristics are controlled.[483] While schools' racial compositions and proportions of

477. Deposition of Salyer at v. 1, 142:10-25.
478. Deposition of Safir at v. 2, 351:23-352:10.
479. *See, e.g.*, CARROLL, ET AL., *supra* note 18.
480. *See* HARRIS, *supra* note 467.
481. *Id.*
482. *Id.*
483. SUSANNA LOEB, ET AL., STANFORD UNIVERSITY SCHOOL OF EDUCATION,

low-income students are strong predictors of teacher turnover, these student variables become less significant when district salary levels and teachers' ratings of working conditions are added to estimates predicting serious turnover problems, schools' reported difficulty in filling vacancies, and proportions of beginning teachers in a school (another proxy for high turnover).[484] Working conditions variables—including large class sizes, facilities and space problems, multi-track schools, and lack of textbooks—are strong and significant predictors of these measures of turnover, as is a measure of beginning teacher salaries that has been adjusted for local labor market wages.[485]

These data suggest that the frequently observed flight of teachers from schools serving low-income and minority students is at least in part a function of the degree to which many of those schools also exhibit poor working and teaching conditions rather than solely attributable to the characteristics of the students or communities themselves. From a policy perspective this is good news, since it points to remediable factors—i.e., the availability of materials, class sizes, high-quality leadership, and professional learning opportunities—that can be altered by policy to shape the availability of teachers to all students.

The stark differences in working conditions in schools across California are a function of several factors that have especially exacerbated the overall decline in state resources for schools serving disadvantaged students. Among these factors is a funding system that allows inequalities in funding, which are further compounded in their effects on purchasing power by large differences in cost of living and in pupil needs that are not taken into account, especially in urban districts.[486] Facilities standards and funding have been inconsistent in California.[487] Categorical aid is not always allocated in ways that would allow districts to address the working conditions that matter most.[488] Although the poorest districts are eligible for more categorical

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TEACHER TURNOVER: THE ROLE OF WORKING CONDITIONS AND SALARIES IN RECRUITING AND RETAINING TEACHERS (forthcoming).

484. *Id.*

485. *Id.*

486. CAL. POSTSECONDARY EDUC. COMM'N, *supra* note 16; BETTS, ET AL., *supra* note 28.

487. FLORA IDA ORTIZ, UNIVERSITY OF CALIFORNIA, RIVERSIDE, ESSENTIAL LEARNING CONDITIONS FOR CALIFORNIA YOUTH: EDUCATIONAL FACILITIES (2002).

488. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, LEARNING . . . TEACHING . . . LEADING (2001).

grants, these funds are often short-term, relatively small in size, targeted on tightly-specified expenditures, and frequently allocated at the school level.[489] Hence they can rarely be spent on the kinds of investments that would make a difference for teacher supply: changes in district-level salary schedules and large-scale working conditions (e.g., facilities that would eliminate multi-track schools; teacher time for shared planning, collaboration, and coaching; or substantially smaller class sizes).[490] Recent efforts to improve working conditions through allocations of categorical aid to low-performing schools have not always targeted the schools with the greatest needs or allowed enough funding per pupil to purchase many of the kinds of resources that would make a widespread difference.[491]

C. *Restrictions of the Pool of Qualified Teachers Through Limitations on Teacher Education Pathways*

In 1970, California became the only state in the nation to eliminate undergraduate teacher education.[492] With the exception of California, most teacher education in the United States occurs within four- to five-year undergraduate programs, which provide about 80% of all new teachers nationally.[493] Nearly all states now also have alternatives that provide post-baccalaureate training for those who decide to enter teaching later.

Although the move to require post-baccalaureate credentialing programs was motivated by concerns for raising quality, it also sharply limited the supply of teachers, making it difficult for many young people to get the information and guidance they needed to enter teaching when considering careers in high

489. *Id.*

490. *Id.*

491. For example, the Teaching as a Priority (TAP) Block Grant, funded at a level of $118.6 million in 2000-01 and 2001-02, offers competitive grants to districts to provide incentives to help lower the number of emergency teachers in low-performing schools. Funds may be used to improve compensation or working conditions. Districts receive $44 per pupil for schools ranked in the first, second, or third decile on the API and $29 per pupil for schools ranked in the fourth and fifth deciles. SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 278.

492. *See* Teacher Preparation and Licensing Act of 1970, CAL. EDUC. CODE §§ 44200 et seq. (commonly known as the Ryan Act).

493. *See generally* NCES, AMERICA'S TEACHERS: *supra* note 396; Linda Darling-Hammond & Eileen Sclan, *Who Teaches and Why: The Dilemmas of Building a Profession for 21st Century Schools, in* HANDBOOK OF RESEARCH ON TEACHER EDUCATION 67-101 (John Sikula ed. 1996).

school, community college, and college.[494] This policy also raised the costs of entering teaching and made it more difficult to prepare teachers in an integrated fashion that would connect subject matter and teaching methods.[495] Out-of-state entrants were required to complete a fifth year of teacher education even though they were already fully prepared and credentialed in other states.[496] This was one of several disincentives for entry from other states.[497]

Recent regulatory changes that now allow blended programs of content and professional study beginning in the undergraduate years provide new options for recruiting people into teaching, but few of these programs exist, and incentives for colleges to create such programs are small in scale.[498] There also have been restrictions on the opportunities for community colleges to offer courses that begin to prepare students for entry into teacher education.[499] These restrictions have been lifted to some extent, but there remain limits on the number and kinds of courses for prospective teachers community colleges can offer.[500] The California Professional Development Task Force recommended a set of incentives for more rapid pursuit of new blended program models for undergraduates and for the participation of community colleges in articulated pathways into teacher education.[501]

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494. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.

495. *Id.*

496. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, A REPORT ON ISSUES INVOLVING THE RECRUITMENT AND RETENTION OF TEACHERS PREPARED IN OTHER STATES (1998).

497. *Id. See infra* notes 508-22 and accompanying text for further discussion of the restriction of out-of-state supply.

498. The process for creating these programs is fairly complicated as there are many new requirements for the kinds of courses they must offer, as well as a requirement that colleges must first start approved subject matter programs if they do not already have them for each blended program they wish to have accredited. A separate blended program must be created and approved for each credentialing area. There is little financial support available from the state to enable colleges to engage in the changes needed to launch these programs after a thirty-year hiatus. Meanwhile, there is much greater financial support for colleges and school districts to create pre-intern and intern programs that work with prospective teachers after they have already left college without a teaching degree and are seeking one while they are teaching, even though this is for many potential teachers a less efficient, and perhaps less effective, training route from both the candidate's and the college's perspective.

499. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.

500. *Id.*

501. *Id.*

Another factor that has restricted the pool of qualified teachers is the funding system for teacher education in the state.[502] Despite rising demand from schools and from applicants who wanted to enter teacher preparation programs, the CSU system, hampered by budget limitations, has sometimes had to turn away qualified applicants.[503] While the UC and CSU systems have increased enrollments and the legislature has increased supports, the funds arriving at teacher preparation programs have not been adequate to support the needed growth in program capacity and have not always been targeted to the campuses and subject area programs where the demands are the greatest.[504]

Yet another set of restrictions on teacher education pathways exists because of the design of the teacher testing system in the state. In addition to their college admission test, candidates from in or out-of-state must take and pass at least one test, and sometimes as many as three, to be admitted into teacher education and student teaching.[505]

Cut-off scores on the subject matter tests were, in some fields, set substantially above those elsewhere in the country.[506] Ironically, candidates who do not pass these tests cannot enter or continue in teacher education, but they can teach in classrooms as teacher of record on emergency permits, waivers, or pre-intern credentials without the benefit of teacher education or mentoring supports.[507]

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502. SHIELDS ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 278.

503. *Id.*

504. *Id. See also* CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.

505. CAL. EDUC. CODE § 44259; *see also* CCTC, RECRUITMENT AND RETENTION, *supra* note 496. In spring of 2003, a single subject matter test replaced the two subject matter tests that Single Subject Credential candidates had to pass previously. *See id.*

506. *See* CALIFORNIA COMMISSION ON CREDENTIALING, ANNUAL REPORT ON THE PRAXIS AND SSAT EXAMS IN ENGLISH, MATHEMATICS, AND SOCIAL SCIENCE (1999), *at* http://www.ctc.ca.gov/aboutctc/agendas/march_1999/perf/perf1.html. For example, in terms of cumulative pass rates, only 21% of all candidates passed all of the mathematics test batteries, only 35% passed the social science batteries, and only 44% passed the English batteries through 1997-98, the most recent year for which data were reported. *See id.*

507. CAL. EDUC. CODE §§ 44225-44305.

D. *Restrictions of the Pool of Teachers Through Limits on Reciprocity with Other States*

In addition to these limitations on teacher supply, California until recently had no form of reciprocity in licensing with other states. Thus, despite nationwide surpluses of elementary teachers during the 1990s,[508] California hired tens of thousands of untrained teachers.[509] Candidates coming into the state who had completed out-of-state teacher education programs could apply for temporary permits while they completed the CBEST, courses or examinations in the U.S. Constitution and the teaching of reading, verification of subject matter competence (through specific courses or tests); courses in health education, special education, and computer education, and a fifth year of study.[510]

A 1998 study commissioned for the CCTC noted the surpluses in other states and also the difficulties out-of-state prepared candidates experienced trying to navigate the requirements they had to complete.[511] The report documented concerns about costs of courses and examinations, confusion about how to complete the many and varied requirements, and redundancy with other requirements the teachers had already met elsewhere.[512] In a survey of out-of-state teachers who had received an initial permit to teach in California, credential requirements were the number one factor in the decision of teachers who had left teaching in California.[513] For those who had not yet left, credential requirements were also one of the top factors in decisions about whether to continue teaching in California, just behind salaries and working conditions.[514] The report notes that, "many of these teachers felt that they were at least as well-prepared as fully credentialed California-prepared teachers but they would be working for the next several years to meet requirements before they would be granted the same certification."[515] A large number of teachers in both groups thought the requirements for the CBEST, subject matter verification, and fifth year of study

508. AMERICAN EDUCATION RESEARCH ASSOCIATION, HANDBOOK OF RESEARCH ON TEACHING (Merlin C. Wittrock ed., 3rd. ed. 1986).

509. SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23.

510. CALIFORNIA COMMISSION FOR TEACHER CREDENTIALING, RECRUITMENT AND RETENTION, *supra* note 496, at 19.

511. *Id.*

512. *Id.*

513. *Id.*

514. *Id.* at 27-28.

515. *Id.* at 32.

were redundant or inappropriate.[516] In particular, teachers said they had already taken similar tests and courses in other states.[517] Recruiters also felt the requirements were a disincentive to recruiting teachers from out-of-state and listed them as one of the greatest difficulties in recruiting and retaining out-of-state teachers.[518]

In the spring of 1998, the legislature passed a bill authorizing the CCTC to establish reciprocity with other states and, in the spring of 2000, the CCTC approved a list of states with which it would seek to do so.[519] The process does not establish full reciprocity, however, but ascertains "equivalences" for various aspects of the California requirements.[520] A fully comparable program must meet California's requirements for equivalence in six areas: subject matter competence, developing English language skills, special education, computer education, U.S. Constitution, and health education.[521] In all cases, candidates must take and pass the CBEST regardless of whether they have already passed a similar test in another state and regardless of any other equivalencies that have been determined for other aspects of the credentialing requirements.[522]

The CCTC has done a thorough study of state credentialing programs to evaluate the comparability of each element with each of California's requirements in every field.[523] Relatively few states have fashioned their requirements sufficiently like California's to be deemed comparable in all areas.[524] As of May, 2002, only seven states had been judged to have fully comparable elementary programs that meet all six areas of equivalence and another seven had been judged to have mathematics pro-

516. *Id.* at 29-30.
517. *Id.*
518. *Id.* at 33,39.
519. CCTC, MULTIPLE AND SINGLE SUBJECT CREDENTIALS, *supra* note 51, at 1-3.
520. *Id.*
521. *Id.*
522. *Id.*
523. *See* CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, MULTIPLE SUBJECT TEACHING CREDENTIAL REQUIREMENTS FOR TEACHERS PREPARED OUTSIDE OF CALIFORNIA (2002), *at* http://www.ctc.ca.gov/credentialinfo/leaflets/cl561.html (last visited Apr. 10, 2003) [hereinafter CCTC, MULTIPLE SUBJECT REQUIREMENTS]; CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, SINGLE SUBJECT TEACHING CREDENTIAL REQUIREMENTS FOR TEACHERS PREPARED OUTSIDE OF CALIFORNIA (2002), *at* http://www.ctc.ca.gov/credentialinfo/leaflets/cl560.html (last visited Apr. 10, 2003) [hereinafter CCTC, SINGLE SUBJECT REQUIREMENTS].
524. *See id.*

grams that are fully equivalent in all respects to California's.[525] Candidates from these states can enter California with a window of time to complete the CBEST and the requirement for a fifth year of study after the bachelor's degree, if they have not already completed such additional study.[526] For other entrants, areas not deemed comparable must be addressed through coursework or examination meeting specific California requirements.[527] Thus, California's policy does not constitute complete reciprocity. Although these recent efforts to acknowledge teachers' prior training are a useful step, this policy has not yet succeeded in increasing recruitment.[528] Between 1997 and 1999-2000, the number of teaching credentials issued to out-of-state entrants actually went down from 5,400 to 3,800.[529] In 2000-01, the number rebounded to about 4,700.[530]

E. *Inadequate Recruitment Incentives for High-need Fields and Locations*

The barriers described above are problematic in all fields, but are especially so in high-need fields like mathematics, science, computer technology, special education, and bilingual education/ English language development where there are genuine undersupplies of candidates. While 6% of secondary social science teachers and 9% of English teachers were underqualified in California in 2000, the proportions grew to 14% in mathematics and physical science and 12% in life science.[531] The proportion of underqualified elementary teachers increased to 13% and the share of special education teachers to 17%.[532] In special education, the number of emergency permits issued in

525. *See id.* Although thirty-six states were deemed to have comparable *subject matter* requirements in for the Multiple Subjects credential and forty-seven were determined to have comparable *subject matter* requirements in mathematics, most of these states were not fully comparable because they did not meet other California requirements. *See id.* (States Determined to be Comparable by Action of the Commission).

526. This can now be satisfied by completing a two-year induction program in lieu of a 5th year of university study.

527. CCTC, SINGLE SUBJECT REQUIREMENTS, *supra* note 523; CCTC, MULTIPLE SUBJECT REQUIREMENTS, *supra* note 523.

528. *See, e.g.*, SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23.

529. *Id.*

530. CCTC, ANNUAL REPORT, *supra* note 426.

531. SHIELDS ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23, at 18.

532. *Id.*

2000-01 was 6,646, more than double the 3,200 awarded three years earlier.[533] This compared to only 2,488 credentials issued in 2000-01, down from 2,700 in 1997-98.[534]

Before the expansion of the Cal T grants and APLE loan programs in 1999—programs that provide service scholarships and loans to underwrite the preparation of those who will enter teaching—there were relatively few supports for individuals who wanted to become well-prepared before they enter teaching in California. These supports are, however, less well-funded than the incentives for candidates to enter prior to preparation.[535] For example, the $23 million allocated to APLE and Cal T in 2000-01 was only half of the amount allocated to pre-intern and intern programs that allow districts to hire teachers before they are prepared.[536] Even with the addition of the Governors Teaching Fellowships, which have provided some scholarships for teacher preparation for those who will teach in underperforming schools, the incentives for preparing to teach have not reached a total investment of more than $50 million. The recently enacted Teaching as a Priority Program provides small allocations to high-need schools (between $29 and $44 per pupil) to improve their capacity to recruit and retain qualified teachers; however, the funding levels are too small and the future of the funds too uncertain for districts to use them for supports like overall salary increases or large-scale new programs.[537]

As a consequence of inadequate incentives coupled with massive demand, the percent of teachers completing preparation before entering teaching dropped precipitously from 78% in 1991-92 to 49% in 2000-01.[538] And, as described below, districts' financial problems have led some to hire inexpensive unprepared teachers even when more expensive, fully prepared teachers are available.[539] The CCTC has not had authority or resources comparable to that exercised by its counterpart agencies in other states to ensure that the state's certification laws are en-

533. CCTC, FOURTH ANNUAL REPORT, *supra* note 75.

534. *Id.*

535. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488; SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23.

536. *Id.*

537. *Id.*

538. SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23, at 17.

539. *See, e.g.*, Report of Hearings on Teaching Quality: California State Legislature Assembly Select Committee on Low Performing Schools (2001).

forced.[540]

F. *Overreliance on Pathways into Teaching, Such as Emergency Hiring and Short-term Alternative Routes, Which Have Extremely High Attrition Rates*

For many years, California responded to difficulties in hiring teachers in high-need schools primarily by reducing standards rather than by increasing incentives. This has led to a reliance on pathways into teaching that have extremely high turnover rates. As noted earlier, the CCTC reports high rates of attrition for emergency credentialed teachers in California,[541] just as national data show high attrition rates for entrants who have little training before they enter teaching.[542] A recent NCES report noted that 29% of new teachers who had not had student teaching left teaching within five years as compared to only 15% of those who had had student teaching.[543] High turnover may be a function of both lack of preparation, which leads to discouragement and burnout, and lack of commitment on the part of those who enter because the job is readily available rather than because they are really interested in teaching.

An approach to recruitment that emphasizes ease of entry without preparation rather than incentives to support recruits in becoming well-prepared can be penny wise and pound foolish. It creates a revolving door of teachers into and out of teaching, rather than a stable teaching force. This strategy imposes high replacement costs for teachers who leave early and high educational costs for the under-education of students who have not had the benefit of trained and experienced teachers.[544]

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540. *See, e.g.*, descriptions of oversight systems in Connecticut and Minnesota, *infra*.

541. *See supra* notes 320-23 and accompanying text.

542. National data from the Recent College Graduates Survey indicate that about two-thirds of unprepared entrants leave teaching within their first year. *See* GRAY, ET AL., *supra* note 429. Other national data indicate that about 60-65% of entrants through short-term alternative certification routes have left within three years. *See* LINDA DARLING-HAMMOND, NATIONAL COMMISSION ON TEACHING & AMERICA'S FUTURE, SOLVING THE DILEMMAS OF TEACHER SUPPLY, DEMAND, AND STANDARDS: HOW WE CAN ENSURE A COMPETENT, CARING, AND QUALIFIED TEACHER FOR EVERY CHILD (2000).

543. HENKE ET AL., *supra* note 434.

544. Regarding replacement costs for teachers who have left teaching, see TEXAS CENTER FOR EDUCATION RESEARCH, THE COST OF TEACH TURNOVER (2000).

G. *Inadequate Supports for Beginning and Veteran Teachers*

In addition to the attrition caused by the large number of emergency hires and others with minimal training, teacher turnover in California has also been related to the unavailability of support for novices, only 16% of whom were working with a mentor teacher on a regular basis in 1998.[545] Even with recent expansions of the Beginning Teacher Support and Assessment (BTSA) and Peer Assistance and Review (PAR) programs, the share of beginning teachers working regularly with a mentor is still relatively small.[546] In 2001, 39% of first and second year teachers participated in BTSA and some unknown number participated in other support programs, including PAR.[547] Although more than 70% of beginning teachers were assigned formal mentors, many did not see them regularly in their classrooms.[548] The SRI 2001 teacher survey found that only 47% of BTSA participants received classroom visits from their support provider at least monthly and only 16% of other beginning teachers received such visits at least monthly.[549] More commonly, districts provide orientation sessions and workshops for beginning teachers rather than on-site mentoring, which is the most powerful component of induction programs.[550]

While the state has provided significant funding for beginning teacher support through the BTSA and PAR programs, this trend has yet to translate into intensive mentoring for beginning teachers in many schools because the state does not require funds to be used for in-classroom mentoring; many districts have not had support to develop high-quality induction programs (like that offered by the New Teacher Center in Santa Cruz, for example); and many schools and districts lack a cadre of expert, veteran teachers to provide mentoring.[551]

Finally, the lack of resources for both teaching and teacher learning in many districts appears to contribute to teacher attrition in California. In addition to the poor working conditions noted earlier, teachers in some districts do not have the opportunity to engage in sustained, high quality professional devel-

545. SHIELDS ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 278.
546. *Id.*
547. *Id.*
548. *Id.*
549. *Id.* at 102.
550. *Id.* at 101.
551. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.

opment that will enable them to help their students meet the new learning standards in their subject area, and few have any regular time for shared planning and collaboration with other teachers to help them solve problems of practice.[552] As noted earlier, these kinds of opportunities matter greatly to teachers.[553] Teachers who are planning to leave their school soon rank lack of time for planning & collaboration as the second most frequent reason, behind poor leadership.[554] In schools with the greatest proportions of English language learners, lack of time for collaboration is ranked as the top reason for thinking of leaving.[555] California teachers who rate their professional development opportunities as poor also are significantly more likely to say they plan to leave their school soon.[556]

The state made substantial investments in professional development for veteran teachers between 1998 and 2001 and targeted some of these programs toward the state's standards in reading and mathematics (specifically Algebra).[557] While these investments were helpful, districts still have many difficulties accessing high-quality professional development for all of their teachers, including those who teach in other subject areas and those whose needs extend beyond the single approach offered.[558] A number of reports have pointed out the problems of California's fragmented, uncoordinated system of professional development that over-prescribes offerings, makes them difficult to access, and leaves many needs unaddressed.[559] For example, the Legislative Analyst's Office noted that the current system, which offers a large number of individual categorical programs, all of which must be administered separately, is "incoherent," "duplicative," and mired in an "administrative quagmire" at both the state and local level:

> Fourteen years ago, when enacting Chapter 1362, the Legislature found: "The current array of staff development activities and incentives has grown by accretion, without a clear vi-

552. *See* SHIELDS ET AL., *supra* note 278.
553. *See* HARRIS, *supra* note 467.
554. *Id.*
555. *Id.*
556. *Id.*
557. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.
558. *Id.*
559. *Id. See also* LEGISLATIVE ANALYST'S OFFICE, ANALYSIS OF THE 2002-03 BUDGET BILL: TEACHER SUPPORT AND DEVELOPMENT (2002), *at* http://www.lao.ca.gov (last visited Apr. 10, 2003).

> sion, remains largely unevaluated, and is unlikely to yield substantial improvement." Since the Legislature made this statement, the state has created 18 new teacher support and development programs .... The recently released Report of the Professional Development Task Force (2001), commissioned by the Superintendent of Public Instruction, reiterated similar concerns to the ones discussed above, including fragmentation, multiple funding streams, and the failure of one-size-fits-all-approaches. The recently released SRI report, The Status of the Teaching Profession, 2001, [(Shields et al., 2001)] also described the system as uncoordinated and ineffective (based upon teachers' assessments). Similarly, an EdSource report, Strengthening Teacher Quality in California (1999), highlighted the difficulty school districts have in leveraging professional development funds to support local reform efforts.[560]

With many programs quickly funded and some nearly as quickly de-funded, it has been difficult for providers to develop and maintain high-quality offerings over time.[561] Some programs are thrown together on an inadequate timeframe and hence are often poorly conducted; others, including some high-quality programs, have been de-funded in times of budget cuts or program shifts, leaving the teachers they served without good alternatives.[562] As a consequence of these difficulties, many of the state's teachers cannot get access to the kinds of professional development they need to develop the specific skills they require to teach the students in their classrooms.[563]

H. *Personnel Practices that Undermine the Hiring and Retention of Qualified Teachers, Especially in Many Urban School Systems*

Evidence nationally and in California indicates that the hiring of under-qualified teachers in many communities is often exacerbated by cumbersome hiring procedures that can take months; late hiring caused by inadequate hiring projections, late budget decisions, and seniority transfer provisions; and, sometimes, preferences for hiring untrained, inexperienced teachers who cost less money.[564] In California, nearly 50% of newly hired

560. *See id.* at 8.
561. *See* CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.
562. *Id.*
563. *Id.*
564. THE NATIONAL COMMISSION ON TEACHING & AMERICA'S FUTURE, *supra* note 4. *See also* SHIELDS ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 278;

teachers in 1998 were hired after August 1, and 25% were hired after the start of the school year.[565] For example, one witness for this case described how her district won't allow schools to hire new teachers until a few weeks into the school year when enrollment has "stabilized."[566] By that time, all credentialed teachers have been hired by other schools, only emergency credentialed teachers are left, and long-term substitutes are necessary until any teacher can be located.[567]

> And so for a whole month there are classrooms that have way too many children, and then at the end of that month's period, the district would say, okay, you have this many students, we can allocate you this many more teachers to make more classrooms. And then at that point the students who have now been in one classroom for a month . . . are then pulled out of that class and an overflow class is made for them, which a lot of times is at first run by a sub. Because at the moment the month ends and we're allocated a teacher, then we start the hiring process, so it might be a few more weeks before we have the permanent teacher hired. And a lot of times that sub is someone with an emergency credential or noncredentialed who hasn't been through an education program of any sort. And the teacher who is generally hired is usually a noncredentialed teacher because by September or October of a school year all credentialed teachers have already been placed in a position in other schools.[568]

Teachers in schools with large numbers of underprepared teachers are significantly less likely to report that they were actively recruited or assisted in the hiring process and more likely to report that the hiring process was slow and full of obstacles.[569] Analyses of district hiring practices by the state in districts that hire large numbers of underqualified teachers often report hiring and screening procedures that are erratic and fraught with glitches, application processes that are not automated or well-coordinated, applicants and vacancies that are not tracked, and

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SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION 2001, *supra* note 23.

565. *See* SHIELDS, ET AL., STATUS OF THE TEACHING PROFESSION 2001, *supra* note 23.

566. Deposition of Nicol LaCava at v. 1, 68:12-70:5, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/LaCav-n1.pdf (last visited Apr. 10, 2003).

567. *Id.*

568. *Id.*

569. SHIELDS ET AL., STATUS OF THE TEACHING PROFESSION 2001, *supra* note 23.

recruitment that is disorganized.[570] For example, in Los Angeles the FCMAT report noted, among many other problems:

> Due to the lack of an integrated electronic process management system, there are a number of procedures that make the Recruitment Center intake and selection processes and all placement processes cumbersome and counterproductive:
>
> a) Appointments for intake and interviews are given in four-hour window periods, with first come, first served within the four hours . . . .
>
> b) It appears that the people who schedule candidates into the four-hour window period are not aware of which intake administrators will be available on which days. Sometimes there are full schedules when some of the intake administrators are on recruiting trips and others have chosen to review their files or answer e-mails rather than to meet with candidates on a particular day. Candidates become very anxious and must wait long periods of time. It has been necessary at times to close the Recruitment Center and send candidates away because of the number of people who are waiting.
>
> c) Intake administrators have been told to interview all candidates, including those in non-need areas, such as social studies candidates who hold emergency credentials.
>
> d) The applications, transcripts and related documents are imaged into the intake system. However, the imaged documents are not available to the school sites or to other offices within the division that have a need to see them, such as the placement, credentials, and salary placement offices.
>
> e) Three administrators are responsible for the referral of candidates to schools with vacancies. Candidates must come to the central office for referrals. (Parking is an extreme problem.) Candidates must make the telephone call to principals to get an appointment. In some cases, candidates become frustrated when principals do

570. *See, e.g.*, FCMAT, ALUM ROCK UNION ELEMENTARY SCHOOL DISTRICT: HUMAN RESOURCES ASSESSMENT AND RECOMMENDATIONS (2002); FCMAT, LOS ANGELES UNIFIED SCHOOL DISTRICT: HUMAN RESOURCES ASSESSMENT AND RECOMMENDATIONS (2002); FCMAT, POMONA SCHOOL DISTRICT: HUMAN RESOURCES ASSESSMENT AND RECOMMENDATIONS (2002); FCMAT, RAVENSWOOD SCHOOL DISTRICT: HUMAN RESOURCES ASSESSMENT AND RECOMMENDATIONS (2002).

> not return their referral appointment calls. Principals are frustrated because they do not know who has been referred to them or the candidates' qualifications. After interviews, principals may request that a particular candidate be hired; however, it may take days before the referral unit learns that a vacancy has been filled. Therefore, candidates are frequently referred for vacancies that have been filled.
>
> f) The Placement Unit is responsible for keeping track of the vacancies that exist in a school. Their only source of information is through the principals. Principals will frequently keep information about existing vacancies from the central office and look for candidates on their own or place a substitute in a vacancy while an identified candidate finishes an undergraduate degree or a teacher preparation program. Principals can use the difference between the salary provided in their budget for a contracted teacher and that of a substitute for other projects.
>
> . . .
>
> h) Principals have the authority to select emergency credentialed candidates even when fully credentialed candidates are available and interested in the positions.[571]

Qualified new teacher candidates are often discouraged by the unprofessional treatment they receive and those who definitely want to teach typically feel they cannot wait until August or September for a job offer. Many who applied to work in urban school systems with slow and difficult hiring processes report that they have had to take offers from other districts or private schools if they were to be guaranteed a job in the fall.[572]

This results in the late hiring of much less-qualified candidates than the district's original pool of applicants.[573] In addition, many districts will bypass well-qualified applicants with greater education and experience in order to hire untrained

571. FCMAT, LOS ANGELES UNIFIED SCHOOL DISTRICT: HUMAN RESOURCES ASSESSMENT AND RECOMMENDATIONS 43-44.

572. SHIELDS ET AL., STATUS OF THE TEACHING PROFESSION, *supra* note 23. *See also* ARTHUR E. WISE, LINDA DARLING-HAMMOND, & BARNETT BERRY, RAND CORPORATION, EFFECTIVE TEACHER SELECTION: FROM RECRUITMENT TO RETENTION (1987).

573. *Id.*

teachers who cost less.[574] In hearings for the Assembly Select Committee on Low Performing Schools (2001), the committee learned that

> there may be reverse incentives for school districts to hire emergency permit holders .... (I)n some situations districts hire emergency permit holders because emergency permit holders: 1) can be paid less; 2) need not initially be provided with benefits; 3) cannot be placed on a tenure track; 4) can be dismissed easily; 5) need not be provided with systematic support and assistance (except for pre-interns).[575]

Finally, some districts do not value the expertise of the teachers they already employ or feel compelled by budget constraints to reduce the share of higher paid, experienced teachers they employ. During the 1990s, some districts in California have used early retirement incentives to encourage retirement of thousands of qualified veteran teachers and have then hired unqualified teachers to replace them.[576] In states with highly-qualified teaching forces, practices that lead to the unnecessary hiring of unqualified teachers are prevented by the state standards board or department of education.[577] In California, the Commission on Teacher Credentialing (CCTC) has not had the authority or resources to investigate the hiring practices of individual school districts.[578] Consequently, emergency hiring requests are approved in bulk without a close evaluation of their need or appropriateness.[579]

I. *Lack of Accountability for Ensuring the Hiring of Qualified Teachers When They are Available*

In contrast to other states that carefully monitor and enforce teacher certification laws when districts are hiring and assigning staff, California has not had effective procedures for ensuring

574. CALIFORNIA STATE LEGISLATURE ASSEMBLY SELECT COMMITTEE ON LOW PERFORMING SCHOOLS, REPORT OF HEARINGS ON TEACHING QUALITY (2001).

575. *Id.* at 5.

576. *See, e.g.*, WestEd Hot Topics webpage, San Francisco and CSR: Good News, Bad News, *at* http://www.wested.org/policy/hot_top/csr/ht_tp_summer98.htm. (last visited Apr. 10, 2003); San Francisco Unified School District, Status Report on Negotiations with United Educators of San Francisco, *at* http://www.sfusd.k12.ca.us/news/status.html (Jan. 13, 1998).

577. *See infra* Part VII.I. for discussions of Minnesota and Connecticut licensing practices.

578. *See infra* notes 589-98 and accompanying text.

579. *See infra* note 599 and accompanying text.

that districts engage in efficient recruitment strategies, hire fully certified teachers when they are available, or maintain a well-functioning personnel system. The CCTC has not had authority or resources allocated to enforce the state's certification laws with respect to district hiring. Examples from other states with few underqualified teachers and more rigorous accountability mechanisms stand in contrast to the procedures in California.

In Connecticut, for example, only 1% of teachers hold temporary credentials while they are serving as a long-term substitute, entering from another state, or switching fields.[580] Connecticut has reciprocity with forty-one other states; teachers receive an interim credential while they pass the Praxis test if they haven't already done so previously in another state.[581] There is also a small number of shortage area permits (for example in Spanish and mathematics) granted while candidates complete a preparation program.[582] In all cases of temporary credentials, candidates must have a BA and at least twelve semester credits in the field they will teach.[583] If a district wants to hire or assign a teacher in one of the temporary license categories, an application demonstrating a shortage of qualified applicants must be filed in writing for each individual applicant.[584] The application requires documentation of the number of interviews that were conducted and an explanation that no fully qualified candidate was available.[585] If a properly certified candidate was rejected, the school district must provide a rationale for its hiring decision (e.g., bad references).[586] The next year, the district must re-post the position and hire a fully qualified teacher or go through the same procedure again.[587] Each year state agency

580. Interview with Abigail Hughes, Associate Commissioner, Director of Evaluation and Research, Connecticut State Department of Education (Spring 2001) [hereinafter Hughes interview]. Information about the credentialing system was also obtained from The State of Connecticut Department of Education Bureau of Certification and Development website, *at* http://www.state.ct.us/sde/dtl/cert/index.htm (last visited Apr. 10, 2003). The comprehensive policy system that Connecticut enacted to create an adequate teacher supply is described later in this paper.

581. *See* Hughes interview, *supra* note 580.

582. *Id.*

583. *Id.*

584. *Id.*

585. *Id.*

586. *Id.*

587. *See* Hughes interview, *supra* note 580.

staff members file an annual compliance report.[588]

In Minnesota, about 4% of candidates hold temporary or limited credentials, which themselves reflect a relatively high standard of training.[589] Entrants prepared out-of-state are reviewed individually and licenses can be granted to those with comparable training to Minnesota's requirements, or additional courses may be required as deemed necessary.[590] Limited licenses can be granted only to secondary teachers with a bachelor's degree and a major or minor in the field while they are completing preparation.[591] Variances are granted to already prepared and certified teachers who are changing content areas while they complete content requirements.[592] A small number of community experts can be hired in a few unique situations.[593] To hire a candidate on a temporary credential, districts must demonstrate that the vacancy has been advertised statewide, diligent efforts have been made to recruit and interview candidates, and no qualified teachers were available.[594] Each application is reviewed individually, and sometimes Board of Teaching staff counsel the district in attempts to advertise more widely or to locate qualified staff.[595] As in Connecticut, districts must repost each position every year.[596] The agencies involved in approving temporary credentials conduct extensive compliance reporting on these teachers, checking mismatches of credentials and assignments through the State Automated Reporting System (STAR), filing annual reports, and following up with districts found to be out of compliance.[597] In such cases, school districts must work to remedy the situation. In egregious cases, school funding can be withheld.[598]

No accountability system like this exists in California. Dis-

588. *Id.*

589. Interview conducted with Mike Tillmann, Executive Director of the Minnesota Board of Teaching, Spring 2001 [hereinafter Tillmann interview]. Information about the credentialing system was also obtained from the Minnesota Department of Education website, *at* http://cfl.state.mn.us/teachbrd/rd2873_toc.html (last visited Apr. 10, 2003).

590. *See* Tillmann interview, *supra* note 589.

591. *Id.*

592. *Id.*

593. *Id.*

594. *Id.*

595. *Id.*

596. *See* Tillmann interview, *supra* note 589.

597. *Id.*

598. *Id.*

tricts can obtain authorization to issue emergency permits in bulk—sometimes by the hundreds or even thousands.[599] In order to be approved, a district must attest to efforts to recruit personnel, and the CCTC relies on the attestations of the district when evaluating the requests.[600] The CCTC does not review the districts' processing of applications, contending that such review is not a part of its jurisdiction,[601] nor does the agency take any action to check on the veracity of district claims when a district requests a waiver of teachers' credentials; it relies on the district's representations.[602] The director of the CCTC's Certification, Assignment, and Waivers Division described the limitations on the agency as follows:

> In order for a district to employ an emergency permit teacher, the district's governing board must annually file a Declaration of Need for Fully Qualified Educators that verifies that the district is unable to recruit a sufficient number of fully trained educators who meet specific employment criteria. If a district submits this Declaration to the Commission, the Commission is *required* to issue emergency permits requested by the district. The employment of teachers, whether fully trained or holders of emergency permits, is a local issue and the Commission cannot intercede on a teacher's behalf.[603]

Although AB 471, signed into law in 1999, requires districts to hire the most qualified person for the position (in the following order: credentialed teacher, candidate nearing the completion of a preparation program, intern, emergency permit holder, waiver holder), there appears to be no well-understood en-

599. For example, in one application, Los Angeles Unified School District requested more than 4,500 emergency permits for multiple subject candidates and more than 1,500 for single subject candidates in 1998-99, along with more than 10,000 CLAD and B-CLAD emergency permits. *See* LAUSD Declaration of Need for Fully Qualified Teachers, 1998-99 (unpublished form submitted to CCTC Apr. 30, 1998)(on file with author). The CCTC form notes that "this declaration must be revised by the employing agency when the number of emergency permits applied for exceeds the estimate by ten percent."

600. Deposition of Sam Swafford at v. 2, 270-71, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Swoff-s2.pdf (last visited Apr. 10, 2003).

601. *Id.*

602. *Id.* at 234-35.

603. Letter from Donald J. Currier, Director, Certification, Assignment and Waivers Division, CCTC, to Erika H. Mininni (Mar. 8, 2000) (on file with author) (emphasis added).

forcement mechanism in place for ensuring that this occurs.[604] There is no formal system in place for determining when an investigation should be launched. There is no complaint form or other conduit for complaints.[605] The CCTC may also ask for county assistance in obtaining access to its documents, but it has not called on counties to help investigate suspicions of failure to make a good-faith effort to recruit fully certified teachers before obtaining permission for emergency permitted teachers.[606] Although the Education Code states that the CCTC shall establish reasonable sanctions for misassignment of teachers,[607] it is not clear that sanctions are administered.[608] The CCTC does monitor misassignments and works with school districts to correct these problems by offering advice and data. These efforts do not always result in substantial changes, however.[609] The Commission has developed proposals to strengthen its capacity to follow-up on complaints regarding misassignment and to review district hiring practices with the possibility of moving to deny emergency permits or waivers.[610]

J. *Additional Unintended Consequences of Current Policies*

In addition to the conditions noted above, there are some unintended consequences of the policies California has adopted to address the declines in the public education system that bear on the quality of teachers available to the state's poorest children.

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604. *See* CAL. EDUC. CODE § 44225.6 (known as AB 471 (Scott)).

605. Deposition of Sam Swofford at v. 2, 293-40, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Swoff-s2.pdf (last visited Apr. 10, 2003).

606. *Id.* at 245-46.

607. CAL. EDUC. CODE § 44258.9 (g)(1).

608. Deposition of Sam Swofford at v. 2, 338, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Swoff-s2.pdf (last visited Apr. 10, 2003).

609. *See, e.g.*, CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, REPORT ON SAN FRANCISCO UNIFIED SCHOOL DISTRICT MONITORING, 2001 REVISIT, *at* http://www.ctc.ca.gov/aboutctc/agendas/july_2001/cca/cca2.html (June 21, 2001).

610. California Commission on Teacher Credentialing, Accountability in Teacher Preparation, Educator Assignments and Use of Emergency Permits: A Proposal from the Commission on Teacher Credentialing (draft sent to author by Linda Bond Feb. 10, 2000).

1. *Class Size Reduction*

The state's class size reduction initiative greatly expanded the hiring of teachers without preparation, especially in the districts with the largest numbers of disadvantaged students and the greatest educational needs.[611] As a Los Angeles teacher explained:

> [O]ne of the sort of hidden aspects of class size reduction is that when class sizes were reduced under Governor Wilson, there was teacher flight from schools in low income communities and communities of color, the schools that have the toughest working conditions, because they've been neglected, overcrowded, etcetera. So you have teachers saying, oh, well, now that class sizes have been reduced, I can teach in Redondo Beach where there's a lot better conditions. Let me go ahead and teach 20 kids in Redondo Beach instead of . . . staying in South Central L.A.[612]

Recent evidence suggests that the reduction of teacher quality in low-income and high-minority schools may have undermined the potentially positive effects of class size reduction in these schools, especially in districts serving large numbers of students of color in the Los Angeles area, where the greatest hiring of inexperienced and underqualified teachers took place.[613] As these analysts and the teacher below note, the outcomes of class size reduction would likely have been more productive if there were a plan in place to recruit and train an adequate supply of teachers:

> [W]hen the state reduced class size. . ., it was done without planning for the teacher training that needed to go into effect to have two teachers to teach 20 kids each instead of one teacher teaching 40 kids. [O]bviously, in my opinion, the remedy to that is put money into training teachers and actually recruit more teachers to do the job.[614]

According to a PPIC report, some additional long term negative effects of this policy could be still unfolding:

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611. STECHER & BOHRNSTEDT, *supra* note 286.

612. Deposition of Michael Alexander Caputo-Pearl at v. 1, 110:21-111:8, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Caput-m1.pdf (last visited Apr. 10, 2003).

613. CHRISTOPHER JEPSEN & STEVEN RIVKIN, PUB. POLICY INSTITUTE OF CALIFORNIA, CLASS SIZE REDUCTION, TEACHER QUALITY, AND ACADEMIC ACHIEVEMENT IN CALIFORNIA PUBLIC ELEMENTARY SCHOOLS (2002).

614. Deposition of Caputo-Pearl at v. 1, 110:21-111:8.

> CSR likely had a more profound effect on the teacher workforce than simply increasing the number of inexperienced and uncertified teachers. Thousands of additional teaching positions were created, but thousands of additional teachers were not. Therefore, much of the increase in teachers consists of individuals who would not have been hired as teachers in the absence of CSR, especially given the availability of jobs with better pay and working conditions. If these teachers continue to be of lower quality than other teachers even after they have acquired additional experience, certification, or education, then CSR has the potential to create a long-term reduction in teacher quality.[615]

2. *The Underpreparation of a Growing Number of Teachers*

One result of the teacher hiring trends in California over the last decade and the kinds of solutions used to fill classrooms in any way possible is that the state has developed a culture and a set of incentives that encourage entry into teaching without preparation. Because of the widespread hiring of underprepared teachers, many candidates are advised that they can enter teaching without a credential and pick one up later if they decide to stay.[616] Unfortunately, this option encourages individuals to enter before they can be effective and decreases the likelihood that they will stay in teaching. It also undermines the likelihood that they will ever become adequately prepared, as the most recent SRI report noted.[617]

The report notes that the high concentration of participants in some teacher education programs who are already teachers of record appears to be negatively impacting program quality and rigor.[618] Course requirements are reduced because students are overloaded with teaching responsibilities, and the focus of teacher education coursework sometimes changes from student learning to classroom control.[619] As a faculty member quoted in the report summarized the situation:

> Emergency credential teachers want a lot of validation for what they are doing. They come in with ideas about what ought to happen in the classroom . . . . What they want is quiet. They ask me, "What do I do to keep them [students]

615. JEPSEN & RIVKIN, *supra* note 613, at x-xi.
616. SHIELDS, ET AL., *supra* note 23.
617. *Id.* at 37.
618. *See id.*
619. *See id.*

> under control?" I ask them how are they creating a learning environment, and they ask, "How do I keep them quiet?"[620]

The report concludes: "The issue of quality is of paramount importance. The introduction of high standards and greater accountability for student learning makes it imperative that the state produce strong teachers. Concurrently, the need to produce more teachers more quickly raises questions about the capacity of institutions to maintain high quality standards."[621]

A recent study of the preparedness of graduates of the California State University system reinforces the SRI study findings.[622] The study found that 45% of graduates had completed their preparation as interns or on emergency credentials rather than in pre-service programs with student teaching.[623] These graduates, who did not have the advantage of practice teaching in the classroom of an expert veteran, or of a tightly configured sequence of courses connected to such clinical experience, felt substantially less well prepared to teach reading and mathematics (and in several other areas, such as classroom management and communicating with parents) than those who completed a traditional teacher education program.[624] The evaluation concluded that:

> [I]nequalities in CSU program outcomes are smaller in magnitude than would be anticipated from the long history of "savage inequalities' in K-12 education. . . . Less promising, though, are findings that show less effectiveness in the preparation of interns and emergency teachers than student teachers. This result is particularly important because it reflects on recent policy shifts in the State rather than on demographic trends for which educators and policymakers have little control or responsibility.[625]

Below, this article argues that a policy approach that reduces standards and truncates preparation in order to fill classrooms not only disadvantages the state's most educationally needy children, but it deflects attention away from the factors that need to be addressed in order to attract and keep an adequate supply of qualified teachers in California's schools: com-

620. *See id.* at 51.
621. *See id.* at 55.
622. *See* FIRST SYSTEMWIDE EVALUATION, *supra* note 208.
623. *See id.*
624. *Id.* at 25; PREPARING TEACHERS FOR READING INSTRUCTION, *supra* note 208, at 12-13.
625. PREPARING TEACHERS FOR READING INSTRUCTION, *supra* note 208, at 13.

petitive and equitable salaries and working conditions, functional district hiring procedures and supports for teachers, adequate preparation and mentoring, sensible state licensing policies, and targeted incentives for recruiting teachers in shortage fields and locations.

3. *The State's Accountability System*

Ironically, California's new testing and accountability system, which includes sanctions for schools that have low test scores and rewards for those with high or improving scores, may also contribute to the maldistribution of qualified teachers in schools serving disadvantaged students. A recent PPIC study raised this concern:

> Although we believe that it is important to hold schools accountable, a likely side-effect of the new drive for accountability will be a shortage of qualified teachers and principals in schools serving disadvantaged populations. The reason is simple: Because of possible sanctions, personnel will avoid working in the schools most likely to be identified as failing to meet state standards .... To reduce this risk, rewards and punishments must be based in part on a comparison of performance relative to other schools serving similar student populations. We would also encourage the state to base measures of performance on changes in student performance rather than just on the levels of achievement across schools .... The 1999 version of the accountability system partially implemented both of these suggestions. Nevertheless, the gap in achievement between low-SES and high-SES schools is so stark that most schools subject to sanctions are likely to be low-SES schools. Therefore, a dangerous side-effect of the accountability reforms could indeed be to dissuade principals and teachers from choosing to work in schools serving disadvantaged populations.[626]

This concern may be warranted. There is some evidence from other states that high-stakes testing systems can have unintended side-effects. For example, schemes that reward or sanction schools based on average student scores have created incentives for pushing low-scorers into special education where their scores do not count, holding them back in the grades so their scores appear artificially to be higher, and encouraging them to

626. BETTS, ET AL., *supra* note 28, at xxvi.

drop out so that schools' average scores will look better.[627] These policies also appear to exacerbate existing incentives for the best-qualified staff to opt for school placements in which students are easy to teach and school stability is high, leaving the least qualified to take jobs where many students have special needs and performance standards will be more difficult to attain. This outcome was recently reported as a result of Florida's recent use of test scores for school rewards and sanctions. Qualified teachers left the schools rated D or F "in droves," to be replaced by teachers without experience and often without training.[628] It remains to be seen whether California's similar accountability system will produce the same unintended consequences.

4. *The State's Definition of "Qualified Teachers"*

As pressure for improving the circumstances of poor and minority students in California has grown, the state has undertaken a number of efforts to ensure more preparation for the most grossly underprepared teachers.[629] One such effort has been the creation of the "pre-intern credential" which places teachers who have not met the state's subject matter requirements into a program to gain subject matter knowledge and eventually to enter a teacher education program to gain teaching knowledge.[630] Pre-interns are emergency permit teachers who have not yet satisfied the subject matter competence requirement for entry into an internship program and who have agreed to work toward subject matter competence while they are teaching as teachers of record. They also have not generally begun studying toward the professional preparation requirements. They must "demonstrate intent" to take the state's subject matter ex-

627. *See* Richard L. Allington & Anne McGill-Franzen, *Unintended Effects of Educational Reform in New York*, 9 EDUC. POL'Y 397, 397-414 (1992). *See also* David N. Fligio & Lawrence S. Getzler, NAT'L BUREAU OF ECON. RESEARCH, ACCOUNTABILITY AND DISABILITY: GAMING THE SYSTEM (2002), *available at* http://www.nber.org/papers/w9307 (last visited Apr. 10, 2003); Walt Haney, *The Myth of the Texas Miracle in Education*, 8 EDUC. POL'Y ANALYSIS ARCHIVES, *at* http://epaa.asu.edu/epaa/v8n41/ (Aug. 19, 2000); FRANK SMITH, ET AL., NEW YORK CITY BOARD OF EDUCATION, HIGH SCHOOL ADMISSION AND THE IMPROVEMENT OF SCHOOLING (1986); Lorrie A. Shepard & Mary Lee Smith, *Synthesis of Research on School Readiness and Kindergarten Retention*, 44 EDUC. LEADERSHIP 86 (1986).

628. *See* Daniel deVise, *A+ Plan Prompts Teacher Exodus in Broward County*, MIAMI HERALD, Nov. 5, 1999.

629. *See* CCTC, SECOND ANNUAL REPORT, *supra* note 60.

630. *Id.*

aminations for teachers and take content courses in a university while they hold the certificate.[631]

In large part as a consequence of efforts to move emergency permit teachers to pre-intern status, the number of emergency permits awarded in California in 2001-02 was somewhat reduced over the previous year, a fact that was noted by the CCTC as a sign of progress in its 2001 Annual Report.[632] However, pre-intern credentials issued during that year increased by an even larger number, leaving even more children taught by under-qualified teachers.[633] While the intent of creating a more structured pathway toward qualifications is salutary, pre-interns are essentially emergency permit teachers who have promised to take content courses they lack. They are not qualified teachers. Changing the categories by which under-qualified teachers are counted—and ignoring those categories in evaluating the state's progress toward meeting the needs of its under-served children—will neither magically make those teachers equivalent to fully qualified teachers nor eliminate the disservice done to the children whom they teach.

Similarly, the State seems to be seeking to sweep the problem of under-qualified teachers under the rug in its response to recent federal legislation calling for all students under the Elementary and Secondary Education Act (ESEA) to be served by fully certified teachers. Because of national concerns about the extent to which low-income children, English language learners, special education students, and others are denied access to qualified teachers, the federal Congress included a new provision in its reauthorization of the ESEA, popularly known as the "No Child Left Behind" Act.[634] The new law requires that states provide children served under the act with teachers who are "highly qualified" in the subjects they teach.[635] This requirement is to be fulfilled by the end of the 2005-06 school year.[636] The law

631. *Id.* at 379.

632. *See* CCTC, ANNUAL REPORT, *supra* note 426, at 19.

633. The 2001 Annual Report notes that the number of emergency permits decreased from 34,309 to 32, 573 (a total of 1,736) from 1999-00 to 2000-01 and the number of waivers decreased from 2,724 to 2,265 (a decrease of 459). *See id.* at 19. While these categories decreased by about 2,195 altogether, the number of pre-intern credentials issued in that year almost doubled from the year before, increasing from 4,142 to 8,092, an increase of 3,950. *See id.* at 16.

634. *See* No Child Left Behind Act, codifed at 20 USCS § 6311.

635. *See id.*

636. *See id.*

defines a "highly qualified" teacher as one who:

- Has obtained full State certification as a teacher or passed the State teacher licensing examination and holds a license to teach in the State, *and does not have certification or licensure requirements waived on an emergency, temporary, or provisional basis;*
- Holds a minimum of a bachelor's degree; and
- Has demonstrated subject area competence in each of the academic subjects in which the teacher teaches, in a manner determined by the State and in compliance with section.[637]

The law clearly aims to ensure that children have teachers who know the subjects they teach and how to teach those subjects and to ensure that high-need students are not taught by teachers hired on emergency permits or waivers. However, California's suggested definition of Highly Qualified Teacher, approved by the California State Board of Education on May 30, 2002 as part of its application for a Federal Title II grant, sought to turn the notion of a highly qualified teacher on its head. The State Board proposed to define a highly qualified teacher as one who has passed only the state basic skills test and met only a portion of its standard subject matter requirements (eighteen credits, which is equivalent to only a fraction of the coursework required in state-approved subject matter programs as prerequisites to entering a teacher education program).[638] The proposed

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637. *See id.*

638. California State Board of Education, Federal Application for ESEA Funding (2002) (unpublished form) (on file with author). The State Board application defined a "highly qualified teacher" in California as requiring:

- Possession of a Baccalaureate Degree from a regionally accredited institution of higher education;
- Successful passage of California's state test of reading, writing and mathematics, unless otherwise specified in the California Education Code;
- Demonstrated competence of the subject or subjects to be taught, as measured by successful passage of the state-approved subject matter examination(s) aligned with the State Board of Education approved student content standards or successful completion of eighteen units of university coursework (or the equivalent) in the subject or subjects to be taught, that has met state standards adopted by the California Commission on Teacher Credentialing and that is aligned with the State Board of Education approved student content standards, or teachers serving on teaching assignment options specified in the California Education Code; and
- Orientation to the subject(s) and grade levels to be taught. Recommendation for advanced study: In addition to meeting the above requirements, participation in intensive additional study in the teaching of reading, mathematics, and science via the Professional Development Institutes administered by the University of California, and reading development programs that meet the requirements of AB 466 (Chapter 623, Statutes of 1999, K-3 Reading) is strongly encouraged for teachers in schools identified for Program Improvement or Intermediate Intervention/Under-

California definition ignores all of the state's extensive requirements for knowledge about teaching. There is no expectation that a highly qualified teacher would meet any of the requirements for knowledge about teaching subject matter, reading, English language learners, special needs students, or organizing and managing a classroom.[639] Additional professional development is encouraged but not required.[640] Individuals currently working on emergency permits and intern credentials would automatically qualify as "highly qualified" under this definition, as would many who are working on pre-intern credentials and waivers.[641]

The U.S. Department of Education signaled that it would not accept this definition, and the state has been required to submit a new proposal. Meanwhile, it is critically important that the people of California recognize that the students served by teachers who have not met the state's full subject matter and teaching standards are not being served by fully-qualified teachers. These students do not have the benefit of the content and teaching knowledge they deserve and are not receiving equivalent treatment under the law. The problem of inadequate teaching cannot be defined away by semantics. Pretending that teachers lacking critical knowledge required by the state's credentialing system are now "highly qualified" will not make it so. The State can and should pursue better alternatives that result in real solutions to these problems.

VIII. RECOMMENDATIONS

In recent years, elected officials and state agencies have begun to respond to the needs for more, better trained, and more equitably distributed teachers with an array of initiatives. The California Commission on Teacher Credentialing (CCTC) has laid the groundwork for a coherent standards-based system of entry and continuation in teaching based on standards that re-

performing School Program (II/USP), and recommended for all teachers in their respective subject areas and grade spans. *Id.*; *see also* No Child Left Behind Teacher Requirements, *at* http://www.cde.ca.gov/board/agenda/yr2003/june/bluejun03item6.pdf (last visited Apr. 10, 2003).

639. *See* No Child Left Behind Teacher Requirements, *supra* note 638.

640. *See id.*

641. *See* discussion of emergency permits and waivers, *supra* notes 79-86 and accompanying text; CAL. EDUC. CODE § 44225. *See also* CCTC, SECOND ANNUAL REPORT, *supra* note 60.

flect the necessary foundations for good teaching and that are linked to the California standards for student learning.[642] The California State Department of Education is implementing, in partnership with the CCTC, a program of mentoring for beginning teachers.[643] California's governor and legislature have made recent investments in teachers' salaries and preparation.[644] Loans and grants for individuals preparing to teach in California have been introduced, and the CCTC is working to expand interstate reciprocity for teachers prepared in other states.[645] The California State University system pledged to expand its production of teacher education graduates to 15,000 annually (up from about 12,000 in 1997)[646] and the University of California system has committed to increase its graduates to 2,500 (from about 800 per year in 1997).[647] These initiatives have begun to make a difference in some communities.

Yet, over the last three years, the number of emergency credentials and waivers has steadily increased[648] and the extent of inequality in the system has grown. This growth suggests that the current policy framework is not yet adequate and does not take account of the equity dimensions of the problem. In some cases, the strategies launched are appropriate but not sufficient in scale. The prescription is right, but the dose is too small. In other cases, key issues still await attention. And in a few instances, existing policies are counterproductive to the goals of staffing California's schools and require revision. A comprehensive policy solution that takes into account the specific nature of California's funding and management problems will be required. As the Public Policy Institute analysis noted:

> The evidence that teacher experience, certification, and teacher education are linked to student achievement suggests that expanding the supply of highly trained and fully certi-

642. *See* CCTC, TEACHERS MEETING STANDARDS, *supra* note 60; *see also supra* notes 61-66.

643. WESTED, FINAL REPORT OF THE INDEPENDENT EVALUATION OF BEGINNING TEACHER SUPPORT AND ASSESMENT PROGRAM (BTSA) (2002).

644. *See* SHIELDS, ET AL., *supra* note 23.

645. CCTC, MULTIPLE AND SINGLE SUBJECT TEACHIG CREDENTIALS, *supra* note 51, at 1-3.

646. *See* CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.

647. *See id.*

648. As noted earlier, pre-intern credentials are now part of the count of underqualified teachers that offset the numbers of emergency credentials, but do not offset the real numbers of individuals working as teachers who have not met the state's standards. *See supra* text accompanying note 6.

> fied teachers in California is in order. However, additional, more subtle reforms are required. Shortages of qualified teachers are highly concentrated geographically and in addition are concentrated in schools serving the most disadvantaged populations. Simply expanding the supply of teachers cannot eliminate either of these inequalities.[649]

A. *Outlines of a Comprehensive Remedy*

An adequate remedy would address the problems outlined here, would build on the efforts the state has made in the last three years, and would ultimately ensure that all teachers will be prepared to teach to its new student learning standards and that all students will have access to fully qualified teachers who can provide them with the opportunity to learn. Based on the analysis offered in this paper, a comprehensive remedy should seek to:

1) Increase the supply of qualified teachers for high-need fields and locations,

2) Reduce high turnover and unwanted attrition of teachers, especially in heavily impacted schools that are currently hard-to-staff,

3) Ensure that all teachers have the preparation they need to teach to the state standards,

4) Monitor the provision of qualified teachers to all schools and students,

5) Create incentives that enable and require all districts to hire well-qualified teachers.

This discussion includes three components of a remedy:

1. Benchmarks: What baseline standard(s) should be met?

2. Processes for Procedural Accountability/State Monitoring: How should the State know when schools are out of compliance? What should the State do to respond to non-compliance in each area?

3. Policy Strategies and Incentives: What would a comprehensive remedy that addresses the problems include? What policy options can the state pursue?

649. *See* BETTS, ET AL., *supra* note 28, at xxiv.

1. *Standards and Benchmarks*

Ultimately, the constitutional standard requires that every student have full and equal access to qualified teachers who can enable students to learn the curriculum and standards required of them by the state. The standard of full and equal access to qualified teachers has also recently been enacted in federal Elementary and Secondary Education Act requirements requiring that all students served under the law be taught by qualified teachers.[650] As noted above, the federal law defines a highly-qualified teacher as one who has obtained "full state certification as a teacher or passed the State teacher licensing examination and holds a license to teach in the State, and does not have certification or licensure requirements waived on an emergency, temporary, or provisional basis."[651]

The state of California measures qualifications through a rational system of certification that is based on knowledge about teaching and learning and grounded in teaching standards as well as the state's standards for student learning. This system of certification provides the legal minimum measure of qualifications. The state has created a system to require qualified teachers: All students should receive them.

Californians overwhelmingly concur with the propositions that qualified teachers matter for educational quality and that all students should have access to them. In a recent poll of California citizens sponsored by Center for the Future of Teaching and Learning, 87% cited well-qualified teachers as the key to raising student achievement.[652] Eight out of ten strongly agreed that, "we should ensure that all children, including those that are economically disadvantaged, have teachers who are fully qualified, even if that means spending more money to achieve that goal," and a comparable share opposed "lowering state requirements for the training needed to become a licensed teacher."[653] When asked to define the qualities of a good teacher, respondents cited:

- Knowing how to manage a classroom.

650. *See* No Child Left Behind Act, *supra* note 634 and accompanying text.

651. U.S. Department of Education. Improving Teacher Quality State Grants Non-Regulatory Draft Guidance, June 6, 2002 at C-1.

652. *See* SHIELDS ET AL., *supra* note 23.

653. *See* RECRUITING NEW TEACHERS, THE ESSENTIAL PROFESSION: CALIFORNIA EDUCATION AT THE CROSSROADS (2001).

- Being well-trained and knowledgeable about how to teach effectively.

- Understanding how children learn.

- Being thoroughly educated in the subjects to be taught.

- Knowing how to monitor and assess real student progress in learning.

- [Showing b]asic sensitivity to each child as an individual.[654]

Recent reports in California have asserted the appropriateness and necessity of this standard and have proposed plans to reach it. The Center for the Future of Teaching and Learning recommended that the legislature sunset existing California Education Code provisions for first-time emergency permits by 2006-07.[655] The California Professional Development Task Force report (2001) included a similar recommendation: "Develop an action plan to eliminate emergency permits and waivers within five years. Evaluate labor market conditions and identify the resources, incentives, and supports needed to enable all districts to recruit and hire qualified teachers."[656] The report proposed a comprehensive plan to eliminate the need for emergency permits.[657]

While there are a number of challenges to staffing California's schools, the analysis included in this paper demonstrates that the problem is susceptible to policy solutions. To make progress, the state should:

a. *Establish a standard below which no school can fall and maintain a monitoring system that identifies schools falling below the standard and ensures those schools and their districts receive close scrutiny and oversight.*

Over the short-run, while a comprehensive remedy is being implemented, the following benchmarks should be established, effective immediately:

- No school (or track in schools with year-round, multi-track schedules) should be allowed to have more than 20% of its

654. *Id.*
655. *See* SHIELDS, ET AL., *supra* note 23, at 90.
656. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.
657. *See id.*

teachers lacking full preliminary or clear certification. This is far from a constitutional standard—which would require all students in public schools to have full access to teachers who meet the state's standards for professional teaching credentials—but is proposed as a minimal standard for a school that can function at even a rudimentary level of professional responsibility for planning and oversight of practice.

- Low-performing schools should be prohibited from having more than the state average proportion of teachers without preliminary or clear credentials. (The California Professional Development Task Force (2001) recommended that this requirement apply to schools that are in the bottom quartile of achievement on the API.) As in New York State, which recently prohibited the assignment of *any* uncredentialed teachers to its lowest performing schools,[658] this measure should stimulate more aggressive recruitment, earlier hiring, stronger supports for teachers, and new teaching incentives to change the mix of teacher qualifications in schools that allocate the least prepared teachers to the students with the greatest needs."[659]

- Require evidence of annual progress: To guide progress and target assistance, California should develop an annual Teacher Qualifications Index[660] that is published alongside the Academic Performance Index (API). The Teacher Qualifications Index should provide school-level and district information about the number of emergency permits, waivers, intern, pre-intern, clear credentialed, and National Board Certified teachers.[661]

2. *State Monitoring and Accountability*

Benchmarks will be of little value if there is no support or enforcement of changes in practice. The legislature should set a goal of phasing out the approval of waivers and emergency

658. *See* Richard P. Mills, Report to the New York State Regents, Commissioner (Jan. 2002), *at* http://www.oms.nysed.gov/comm/2002/reg0102.htm.

659. *See, e.g.*, NEW YORK STATE SCHOOL BOARDS ASSOCIATION, TEACHER RECRUITING GOES HIGH TECH, SCHOOL BOARD NEWS, Jun. 10, 2002, *at* http://nyssba.org/adnews/issues/issues061002.htm; UNITED FEDERATION OF TEACHERS, SCHOOLS AND DISTRICTS QUALIFING FOR TUITION AID AND LOAN FORGIVENESS FOR 2001-2002 (rev. Feb. 2002), *at* http://www.uft.org/?fid=128&tf=804; NEW YORK STATE UNITED TEACHERS, NEW YORK STATE MENTOR-TEACHER PROGRAM GRANT, (May 2003), *at* http://www.nysut.org/research/bulletins/2003mentorinternship.html.

660. *See* FUTERNICK, *supra* note 7.

661. *See* SHIELDS, ET AL., *supra* note 23, at 90.

permits over the next five years, allowing waiver of credential requirements by CTC only in exceptional cases where specialized individual skill and talent or eminence is involved.[662] As part of the plan associated with this goal, the state system should:

a. *Develop an effective system for monitoring and enforcing its teacher credentialing laws, evaluating problems, and improving school hiring.*

-Expand investigatory power and capacity of appropriate state agencies to enforce the state's credentialing standards and prevent the hiring of uncredentialed teachers where qualified, credentialed teachers are available.

- As other states do, require all districts applying for emergency permits and waivers to demonstrate that 1) an adequate search has been conducted, 2) there are no suitable, qualified individuals who have applied for the position, and 3) there are no certified individuals in this field currently holding non-teaching positions in the district who could be reassigned in lieu of hiring an uncredentialed teacher.

- Monitor the annual Teacher Qualifications Index. For schools and districts that exceed the maximum aggregate level of underqualified teachers, the State should impose closer scrutiny, including independent verification of facts regarding reasons for the unavailability of credentialed teachers, before approving any emergency permits, waivers, or pre-internships.

- Conduct a full and complete state audit of school hiring needs and district hiring policies in schools or districts that repeatedly hire large numbers of underqualified teachers. Require overhaul of non-functioning recruitment and hiring systems.[663]

- Provide incentives to districts for updating and streamlining hiring processes, for timely hiring of fully qualified teachers, and for priority placement of fully qualified teachers and admin-

662. Fully-prepared out-of-state teachers should be eligible for licensure through reciprocity, rather than being placed on emergency permits.

663. Currently, although FCMAT has been charged with conducting such reviews, FCMAT has no authority to order changes, and there is no follow-up mechanism and no coordination with the CCTC. The CCTC does not receive FCMAT audit reports and there is no coordination between the two agencies. CCTC director, Sam Swofford has stated that he is unfamiliar with FCMAT's responsibilities. Deposition of Sam Swofford at v. 2, 273, Williams, et al. v. California (No. 312236), *at* www.mofo.com/decentschools/depositions/Swoff-s2.pdf (last visited Apr. 10, 2003).

istrators in hard-to-staff schools. The CA Professional Development Task Force Report (2001) suggested that, "A state challenge fund should be created to support high-need districts in upgrading their personnel departments (including technology infusions), expanding their recruitment capacity, and streamlining their hiring processes."[664]

3. *Policy Strategies for a Comprehensive Remedy*

The problem of emergency hiring cannot be cured merely through better enforcement. Ensuring that all students are taught by well-prepared teachers will require a set of purposeful strategies for managing the teacher labor force in California and efforts to make teaching in hard-to-staff schools more attractive by offering better salaries, working conditions, and mentoring. Other states that have ended the practice of emergency credentialing have pursued a multi-pronged approach: raising and equalizing salaries across districts; creating salary aid that rewards candidates for becoming well-prepared and districts for hiring well-prepared candidates; increasing subsidies to candidates and colleges for training in shortage fields; expanding reciprocity; improving retention through better preparation, mentoring, and working conditions; and enforcing certification laws while assisting districts in recruiting more effectively.[665] California has begun to enact some of these strategies, though not yet at a scale and in a combination sufficient to solve the problem. As described below, policies that will help attract and retain qualified and competent teachers for every child should:

a. Expand the pool through

(1) More equalized and market sensitive salaries for fully qualified teachers and increased incentives for hiring qualified teachers.

(2) Expanded subsidies for the preparation of prospective teachers, especially for shortage fields and locations.

(3) Enhanced reciprocity with other states and streamlined credentialing procedures.

b. Improve distribution, retention, and effectiveness through

(1) Targeted incentives for improving working conditions in

664. *See* CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.

665. *See generally* Darling-Hammond, *supra* note 29 for a summary of teacher policies in several other states.

hard-to-staff schools.

(2) Improved teacher education and mentoring.

a. *Expand the Pool*

1. Create a finance system that ensures more market sensitive and equalized salaries across districts and incorporate incentives for hiring fully qualified teachers.

A number of reports have noted, first, that key disparities in California include access to qualified teachers and the quality curriculum they can provide, and, second, that the problems of recruiting teachers are affected by salaries and must take into account the different labor markets across the state, including different costs of living and levels of pupil need.[666] For example the Public Policy Institute (PPIC) Report observed that,

> Equalization policies should do more than alter growth in overall budget levels. We believe they should target the area of greatest inequality: teacher preparation. . . . Traditional redistributive policies aimed at reducing variations in revenues per pupil across districts are unlikely to equalize student achievement across all schools. . . . [R]esource inequality is restricted primarily to teacher training and curriculum, so that redistribution must focus on these specific characteristics of schools rather than on revenues per pupil alone.[667]

This observation suggests a strategy that targets resources to the provision of well-qualified teachers and that takes into account the factors that affect their distribution, including the purchasing power of salaries. The PPIC report notes that teacher shortages in the most heavily affected areas might be partially reduced through differential cost-of-living adjustments across school districts, a reform also discussed in a recent report by the Legislative Analyst's Office.[668] Pogodzinski's analysis and recommendations for reducing the hiring of underqualified teachers also discuss the advisability of targeted salary adjustments that take regional cost-of-living differences into account.[669]

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666. *See infra* notes 667-69 and accompanying text.

667. BETTS, ET AL., *supra* note 28, at xxix-xxx.

668. *See id.* at xxiv. *See also* ELIZABETH G. HILL, LEGISLATIVE ANALYST'S OFFICE, EQUALIZING SCHOOL DISTRICT FUNDING: OPTION FOR A SLIDING SCALE COLA 1 (1999).

669. *See* POGODZINSKI, *supra* note 369.

The other source of differential costs is the cost of education for students with different needs, for example, those with special education needs, Limited English proficiency, and those who live in poverty who are more heavily concentrated in urban and rural school districts. Taking these costs into account can be accomplished through a weighted per pupil formula that equalizes overall funding and applies weights for high-need students as well as for regional cost differentials.

An even more targeted approach that addresses the importance of teachers as a key educational resource is one that allocates a substantial portion of state aid directly to teachers' salaries. Some states do this through minimum statewide salary schedules (e.g., North Carolina and others in the South); others use state salary incentives that are subject to collective bargaining (e.g., Connecticut and some other Northern states). Reforms in North Carolina and Connecticut that targeted the creation of a highly skilled teaching force resulted in some of the steepest achievement gains for students in the country throughout the 1990s.[670]

The Connecticut strategy, which relied on incentives for local districts to raise salaries, is perhaps most applicable in a state like California with strong traditions of local control and collective bargaining. This strategy would establish a target minimum beginning teacher salary that is competitive in the labor market and provide salary subsidies to districts to reach this target minimum salary. The subsidies would be provided based on an equalizing formula that provides different levels of funding to districts depending on their wealth, cost of living, and pupil needs. This could be done either through a weighted formula approach that includes cost of living and pupil needs in the formula, or through a categorical aid system for districts with high priority needs. To achieve the goal of equalizing access and acknowledging real educational costs, formula weightings or categorical aid eligibility would need to include language status, income, and exceptionalities, not just test scores.[671] To create incentives for hiring fully qualified teachers, the Connecticut reform allocated state incentive funds to districts on the basis of

670. *See* Darling-Hammond, *Teacher Quality and Student Achievement*, *supra* note 29; WILSON ET AL., *supra* note 180; JOAN B. BARON, NAT'L EDUC. GOALS PANEL, EXPLORING HIGH AND IMPROVING READING ACHIEVEMENT IN CONNECTICUT (1999).

671. In Connecticut, the salary schedule remained subject to district-level collective bargaining.

numbers of fully certified teachers they hired.[672] Tying these subsidies to salaries for qualified teachers created incentives for candidates to become prepared and for districts to hire prepared candidates. Coupled with subsidies to support candidates during teacher preparation and mentoring for all beginning teachers, Connecticut was able to change its teacher labor market from shortages in its cities to statewide surpluses within three years and to maintain surpluses for more than a decade thereafter.[673] During that decade, its increasingly diverse student population climbed to one of the top states in the nation on National Assessments of reading, writing, mathematics, and science.[674]

A strategy like this one would put more of California's resources into teachers' salaries. In 2000, California ranked thirty-second nationally in the share of the education budget spent on teachers—only 39% of the total budget.[675] Such a strategy would also create incentives and capacity for hiring qualified teachers, and create a level playing field among districts in gaining access to qualified teachers.[676]

2. Expand subsidies for the preparation of prospective teachers, especially for shortage fields and locations.

If an adequate ongoing supply of teachers is to be available for California schools, it is critical that well-prepared teachers be recruited into shortage fields (e.g., mathematics, science, computer science, special education, foreign languages, English Language Development) and into shortage locations, especially urban and poor rural schools. As this paper has documented, filling vacancies with underprepared teachers contributes to a revolving door of teachers in high-need schools, exacerbating

672. *See* WILSON ET AL., *supra* note 180; BARON, *supra* note 670.

673. CONNECTICUT STATE DEPARTMENT OF EDUCATION, IMPACT OF EDUCATION ENHANCEMENT ACT, RESEARCH BULLETIN, SCHOOL YEAR 1990, NO. 1. (1990); CONNECTICUT STATE BOARD OF EDUCATION, THE OTHER SIDE OF THE EQUATION: IMPACT OF THE TEACHER STANDARDS PROVISIONS OF THE EDUCATION ENHANCEMENT ACT (1992).

674. *Id.*

675. *See supra* note 488 & accompanying text.

676. An average increase of $5,000 in teacher salaries for new hires would cost the state about $125 million annually. The state could provide 50% of the support for an equivalent raise for all teachers for only $600 million a year, a relatively small proportion of its current budget. Ongoing salary incentives for National Board Certified teachers (some other states now offer 10-12% salary increases) could also be incorporated in a salary formula.

rather than alleviating the long-term teacher supply problem.

The reforms in Connecticut and North Carolina have been supported by scholarships and forgivable loans subsidizing teacher education for candidates who prepare and teach in shortage fields or shortage locations. The subsidies for preparation, offered in exchange for several years of public school teaching in the state, have brought strong candidates into teaching and kept them there. The highly selective North Carolina Teaching Fellows Program, for example, recruited thousands of high-ability candidates into teaching in North Carolina through an enhanced and fully-funded teacher preparation experience and produced retention rates in teaching of more than 75% after its first seven years of operation.[677] Many of the remaining candidates had moved into educational leadership positions in the public schools.[678]

California has enacted some similar initiatives and should expand these incentives for recruiting undergraduate and graduate students into teaching, with particular emphasis on increasing service scholarships and loan programs for teacher preparation for those who make a commitment to teach in hard-to-staff schools. Current programs—APLE loans, CAL T Grants, and Governors Fellowships—should be expanded by increasing their size and number,[679] making them more widely available to in-state candidates and also to out-of-state candidates who come to prepare and teach in California. Incentives such as increased subsidies or reduced payback periods for those preparing to teach in shortage fields (e.g. math, science) or who will work in high-need locations (including low-income, high-need, or hard-to-staff schools) can direct candidates to the fields and locations where they are needed.[680]

To ensure that candidates receive the kind of high-quality

677. *See* DARLING-HAMMOND ET AL., *supra* note 239.

678. *Id.*

679. In 2001, the funding level for these programs combined was about $25 million. The state spent about $50 million on programs for uncertified teachers in 1999-2000. *Id.* At 12,000 awards annually and $10,000 average award, the costs of an expanded set of subsidies for preparation, sufficient to fill all hard-to-staff vacancies with fully prepared teachers, would be $120 million annually.

680. It is preferable to use measures of pupil income and other measures of pupil need, such as ELL status, for designating incentives to schools for recruiting and retaining fully qualified teachers, rather than low-performing school status. These measures are closer proxies for the actual needs of schools in California and using them would not create disincentives for improved performance in high-need schools.

preparation that will allow them to become competent and to stay in teaching, these subsidies should target programs that provide a coherent preparation including student teaching. Another useful strategy would be to provide stipends for student teaching and financial support for cooperating teachers in low-income, high-need schools to allow candidates to learn to teach in these schools and to complete their preparation prior to becoming the teacher of record.

Finally, a high-yield source of candidates for hard-to-staff schools is the paraprofessional work force. To meet the need for teachers, recruitment incentives should also support expanded pathways into teaching for paraprofessionals and other students via community college to college teacher preparation program articulation and student supports.

3. Enhance reciprocity with other states and streamline credentialing procedures.

Since there is a substantial surplus of teachers in many other states, reciprocity coupled with aggressive recruitment could make an important contribution to California's need for well-qualified teachers. Whereas California enrollments are projected to increase by more than 20% by 2007, enrollment declines are anticipated in most parts of the Northeast and Midwest, and other states will have stable enrollments.[681] Many of these states have a large number of teacher education institutions and regularly produce more teachers than they can hire.[682] Elementary education has been a field of national surplus for a number of years, along with fields like English, social studies, art, business education, health education, physical education, and social studies.[683]

Although the CCTC should be applauded for moving to acknowledge equivalence in specific requirements for specific areas across other states, the conditions continue to be more restrictive than full reciprocity and may still constitute a barrier to the entry of fully qualified teachers. The numbers of out-of-state entrants increased somewhat between 1999-2000 and 2000-01 when these new rules began to take wider effect, but have not

681. *See* WILLIAM J. HUSSAR, NATIONAL CENTER FOR EDUCATION STATISTICS, PROJECTIONS OF EDUCATION STATISTICS TO 2007 (1997).

682. *See* AMERICAN ASSOCIATION FOR EMPLOYMENT IN EDUCATION, *supra* note 428.

683. *Id.*

yet returned to the level of 1997-98.[684] The state should continue to work to establish even more complete reciprocity with other states, while also reducing duplicative testing requirements for both in- and out-of-state candidates. For example, whereas California requires all candidates to take the CBEST, many states allow those who have passed a more difficult test like the Praxis, who have attained a minimum score on the SAT, or who have passed a comparable test in another state to waive the basic skills test, since they have already met a higher standard. Furthermore, no other state requires two separate tests of subject matter knowledge as California does. Under current requirements, entrants to teaching in California might take as many as four tests (five were required until 2003) on top of the college admissions testing before they are fully certified.[685] These tests, which are unique to California, pose time, money, and transaction costs beyond those any other state requires.

Even more aggressive efforts to ease entry for teachers from across the country will be needed to solve California's teacher supply problems. Regulatory action could take care of many of these issues. Legislative action would be needed to remove add-on requirements like the CBEST and health education. More generous means of evaluating comparability (e.g., accepting more rigorous subject matter tests in lieu of basic skills tests and moving toward full reciprocity in lieu of equivalencies) would help to increase the number of states from which California could recruit.

b. *Improve Conditions and Support*

1. Expand incentives for local school districts to improve working conditions in schools that serve high-need students and in hard-to-staff

684. *See* CCTC, ANNUAL REPORT, *supra* note 426. *See also* SHIELDS, ET AL., *supra* note 23.

685. Until 2003, a secondary candidate who has not completed a subject matter waiver in California had to take the CBEST, the SSAT, the Praxis II, a new Teacher Performance Assessment during teacher education, and another teaching assessment (currently the CFASST) during the initial year of teaching. An elementary candidate would take the CBEST, the MSAT, the RICA, and the two new Teacher Performance Assessments (one during college and one after). In 2003, the SSAT and Praxis tests were replaced with a single test, the CSET, so that the total number of tests was reduced by one for secondary teachers. Elementary teachers took the same number of tests, with the CSET replacing the MSAT. *See* CCTC, STANDARDS OF QUALITY, *supra* note 51, at v-vi; CA. EDUC. CODE § 44259(c)(3)(A).

schools.

In the long run, more equalized funding in California that takes account of differences in the costs of education would allow schools to improve other aspects of their operations that influence the recruitment and retention of well-qualified teachers, such as facilities, availability of materials and supplies, and class size.

In the immediate run, categorical aid to improve working conditions and teaching conditions in hard-to-staff schools may be necessary to stem the flood of attrition in these schools. For example smaller classes, greater access to materials, time for co-planning and professional development, and high-quality mentoring would greatly impact the ability of disadvantaged schools to get, keep, and support new teachers.

The California Professional Development Task Force recommended that, "California should expand the Teachers as a Priority (TAP) Block Grant program that provides funding for incentives to attract and retain fully credentialed teachers in low-performing schools."[686] To be effective, this program would need to be funded at a much higher level (it is currently only about $44 per student)[687] and available to schools that have large numbers of high-need students as well as in low-performing schools.

2. Expand supports for high-quality teacher preparation and mentoring.

The opportunity to develop more high-quality preparation in California has been increased by the recent removal of the long-time state proscription against undergraduate involvement in teacher education. This separation of subject matter studies from the study of education had created a system of mostly nine-month post-baccalaureate credential programs that were disconnected from the undergraduate curriculum. This made it difficult to integrate arts and sciences coursework with preparation in content pedagogy. It also made it difficult for prospective teachers to begin earlier coursework that would enhance their knowledge about and familiarity with teaching and to receive appropriate advisement regarding both their subject matter and educational studies. The recent regulatory changes cre-

686. CALIFORNIA PROFESSIONAL DEVELOPMENT TASK FORCE, *supra* note 488.
687. *Id.*

ate new opportunities for California colleges and universities to combine undergraduate and graduate studies, to connect content and pedagogy, and to create more extended clinical practice experiences.[688] These changes could enable campuses to create the more powerful integrated models like the five-year programs that have proven successful elsewhere in the country.

Some California campuses have begun to move affirmatively toward the creation of these more powerful programs.[689] In addition, California campuses pioneered the development of post-baccalaureate models of preparation that develop sophisticated forms of student-centered practice by tightly linking theory and pedagogical coursework to extensive and intensively supervised clinical practice in both "traditional" and carefully designed "internship" models of training. However, the overall quality of teacher preparation in California has been threatened in the last few years by the widespread hiring of unprepared teachers and by increasing pressures to reduce the amount and quality of preparation in response to high teacher demand. The supply situation and the State's approach to managing it are profoundly influencing the nature and availability of productive learning opportunities for teachers. The state needs more sustained and purposeful incentives for the continuation and expansion of high-quality models of preparation, including funding that ensures that colleges in high-demand areas can accept qualified applicants and guidance that ensures that both preparation and induction models use strategies that have been shown to be effective in developing effective teachers who stay in the profession. To build a strong system California should:

- Provide incentives for the establishment of more extended teacher education programs, including programs that start in the undergraduate years, sufficient to ensure the teacher education pipeline is aligned with the need for credentialed teachers.

- Support professional development school partnerships between schools and universities in high-need communities that

688. CALIFORNIA COMMISSION ON TEACHER CREDENTIALING, STANDARDS OF QUALITY AND EFFECTIVENESS FOR BLENDED PROGRAMS OF UNDERGRADUATE TEACHER PREPARATION (Oct. 2001), at http://www.ctc.ca.gov/educator-standards/blended.pdf (last visited Apr. 18, 2003).

689. For example, at its meeting on May 2, 2001, the CCTC announced awards of grants to the following campuses to create blended programs of teacher education: California State University campuses at Dominguez Hills, Long Beach, Bakersfield, Sacramento, and Stanislaus, and at University of California at Davis and Sonoma State University.

allow new teachers to learn under the guidance of expert veterans in schools with concentrations of low-income and minority students where they will be needed.

- Ensure that formulas for the support of teacher education provide incentives for the expansion of high-quality programs and adequately support the growing number of students served, especially in high-demand, high-need regions of the state.

- Increase technical support for effective mentoring and induction programs for new teachers under BTSA and PAR and in all internship programs. Ensure that funding for these programs is spent on supplying mentors who have released time to coach beginning teachers in the classroom.

- Develop and fund high-quality mentor training and provide incentives to attract, hire, and reward mentors in high-need schools.

4. *The Need for a Comprehensive Approach*

Research and experience in California and elsewhere suggest the likely success of these strategies, particularly if they are enacted in a coherent, comprehensive system aimed at ensuring that every child has access to qualified teachers. In addition to states that have created policy systems that provide well-qualified teachers to their students, some urban districts in California and elsewhere have demonstrated that using a focused and comprehensive approach can make a major difference in teacher quality.

The recent experience of New York City is instructive. A state mandate that uncertified teachers could no longer be placed in low-performing schools plus the requirements of the new federal law led to improvements in hiring practices focused on recruiting and hiring qualified teachers and an average 16% increase in teachers' salaries (over 20% for beginning teachers) to make them more comparable to the surrounding suburbs.[690] Vacancies for 2002-03 were filled by July, and 90% of the new hires were fully certified, in contrast to only 60% the year before.[691] The remaining 10% were in programs to certify them by the end of the school year.[692]

690. Elizabeth Hays & Alison Gendar, *Pay Hike Lures Better-Qualified Teachers*, N.Y. DAILY NEWS, July 25, 2002, at 10, *available at* http://www.nydailynews.com (last visited Apr. 10, 2003).

691. *Id.*

692. *Id.*

California districts with purposeful approaches have achieved comparable successes. Recent headlines trumpeted the fact that Anaheim City Schools opened the 2001 school year with all of its newly hired teachers fully credentialed for the first time in five years.[693] This urban district of 22,200 has a majority of English language learners, the county's highest poverty rate, and year-round schools due to overcrowding, but was able to improve the quality of its teaching staff through focused efforts at recruitment and support, many of them supported by recent state policies, such as the Teachers as a Priority program.[694] These efforts included bonuses for newly-hired teachers and for current employees who refer teachers, relocation loans, moving discounts, and use of loan forgiveness for prepared teachers who work in high-need areas.

The National Commission on Teaching and America's Future has highlighted the successes of New Haven Unified School District, a district of 14,000 just south of Oakland that serves mostly low-income students and students of color, in creating a strong system for ensuring teacher quality.[695] When school districts across California scrambled in recent years to hire qualified teachers, often failing to do so, New Haven had in place an aggressive recruitment system and a high-quality training program with local universities that allowed it to continue its long-term habit of hiring universally well-prepared, committed, and diverse teachers to staff its schools. In 2001, ten of its eleven schools had *no* teachers lacking full credentials, and the district average was 0.1%.[696] One factor in this success is that, although not a top-spending district, New Haven invests its resources in good classroom teaching conditions and teachers' salaries.[697] New Haven's personnel office uses advanced technology and a wide range of teacher supports to recruit from a national pool of exceptional teachers and hire them quickly. The district was one of the first in the state to implement a Beginning Teacher Support and Assessment Program that provides support for teachers in their first two years in the classroom. All beginning teachers

693. *See* Sara Tully Tapia, *Perks Lure teachers with Full Credentials*, ORANGE COUNTY REGISTER, July 5, 2001.

694. *Id.*

695. *See* SNYDER, *supra* note 329.

696. *See* FUTERNICK, *supra* note 7.

697. In 1998, for example, New Haven's salaries were more than 30% higher than nearby Oakland's, where large numbers of unqualified teachers have been hired. *See* SNYDER, *supra* note 329.

receive such support from a trained mentor who has release time for this purpose. In addition, with the support of California State University, Hayward, the district designed an innovative teacher education program that combines college coursework and an intensive internship, including student teaching, conducted under the close supervision of school-based educators. Because of these initiatives, the district has surpluses of qualified teachers.[698]

Using very similar strategies, San Diego City Schools has recently overhauled its teacher recruitment and retention system, aggressively recruiting well-trained teachers, collaborating with universities on new training programs in high-need fields and creating smooth pathways with local schools of education, offering contracts to well-prepared teachers as early as possible (as much as a year in advance of hiring), and reaching out to teachers in other states.[699] In addition, the district streamlined the hiring process, put the entire system on-line, and improved the system's capacity to expeditiously manage data, interviews, and other components of the selection system that had slowed the process and caused many candidates to give up on the system and go elsewhere. By fall of 2001, while districts like San Francisco and Los Angeles hired hundreds of uncredentialed teachers and the state as a whole hired more than 50% of beginners without full credentials, San Diego filled almost all of its 1,081 vacancies with credentialed teachers, eliminating all but eleven emergency permits.[700]

While the policy challenge in California is not trivial, especially after years of neglect, it is also clearly not insurmountable. With determination and will, California can and must make good on its constitutional obligation to provide each child the right to be taught that is a foundation for the right to learn. Anything less is a violation of the constitutional requirement that all students receive a basic education with equal protection under the law.

698. *See id.*

699. LINDA DARLING-HAMMOND ET AL., CENTER FOR THE STUDY OF TEACHING AND POLICY, UNIV. OF WASHINGTON, BUILDING INSTRUCTIONAL QUALITY: INSIDE-OUT AND OUTSIDE-IN (2002).

700. *See id.*